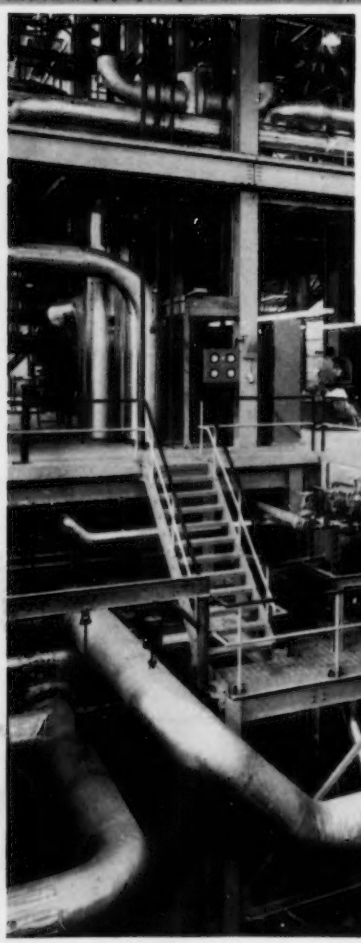
- *Where's The Wood Coming From?*
- *Lubrication Needs A Fresh Look*
- *New Sodium Base Recovery Process*

PAPER TRADE

JOURNAL

APRIL 30, 1956

One of a series highlighting the Engineer's contribution to industrial progress



POWER

The Engineer's analysis of power requirements weighs not only the cost of power generation or purchase . . . but also the economies to be gained by service continuity, distribution and control in individual power application within your plant.

With the experience gained in serving many industries, the firm of professional engineers is in a favorable position to guide you in the increasingly complex application of power for efficient production.

The Bowaters Southern Paper Corporation, Calhoun, Tennessee

Engineers for 54 Years... J. E. SIRRINE COMPANY

GREENVILLE • SOUTH CAROLINA

A DEPARTMENTALIZED ENGINEERING ORGANIZATION SERVING BUSINESS, COMMERCE AND INDUSTRY

The risk is too great —clean it right

You don't take risks when men, equipment, and lost production time are involved. That's why more and more companies are investigating the methods and firms used in their chemical cleaning. They know it's work for experts.

What are they concerned about?

First, they want to know they are getting the benefits of experience. These benefits include less downtime and more thorough cleaning. Dowell has this experience with over 15 years and 10,000 boilers alone to their credit. In saving downtime, Dowell often cleans equipment while it is in operation.

Next, these companies want to be sure their men and equipment have the greatest possible protection. Dowell excels here, too. For safety is foremost in the Dowell engineer's mind. Thoroughly trained, he uses only the latest safety methods and equipment. He works closely with your safety personnel to establish safest possible working procedures.

Be sure you are getting maximum results with maximum protection in your chemical cleaning.

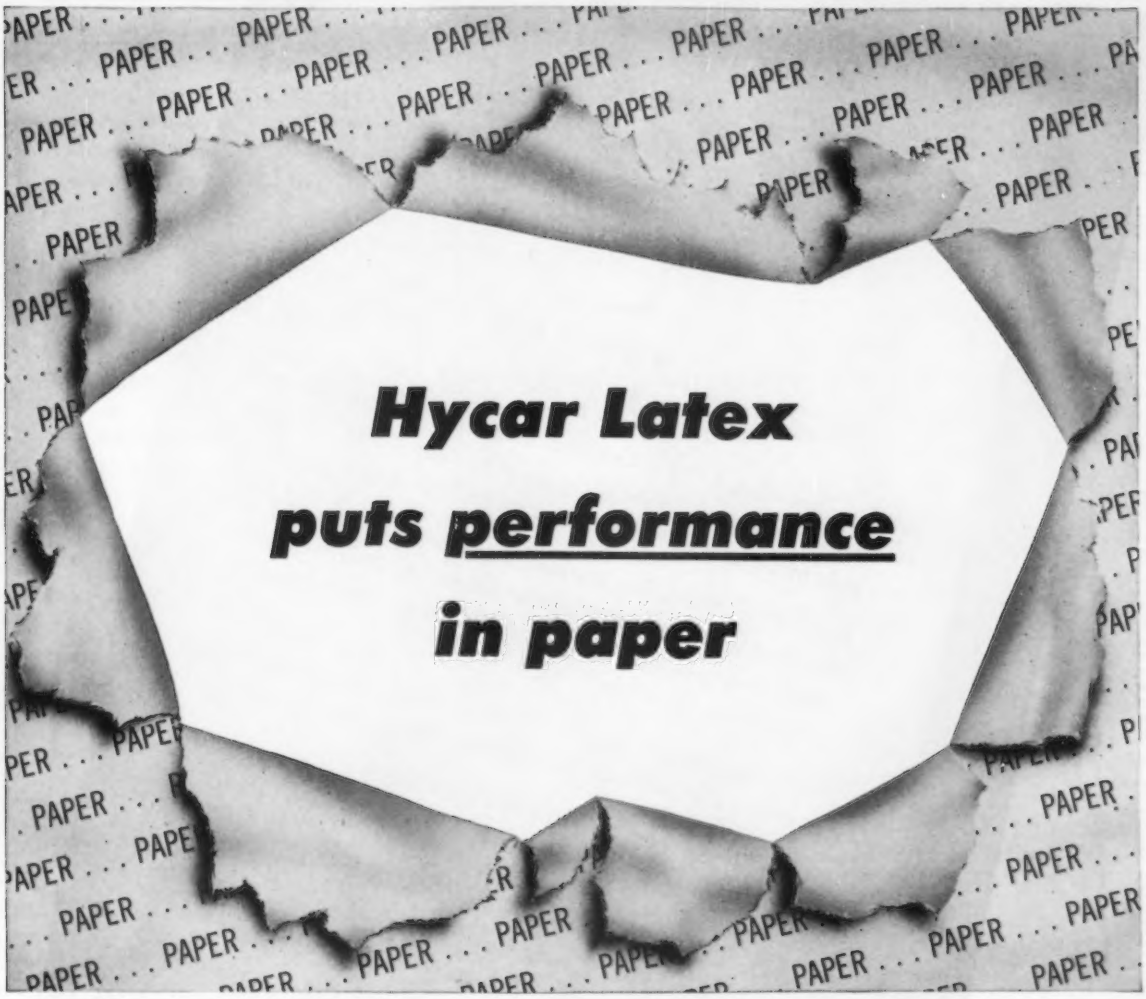
Call the Dowell office near you. Dowell engineers are ready to discuss and help you with your cleaning problems any time, at no obligation. Or write Dowell Incorporated, Tulsa 1, Oklahoma, Dept. D-63.

chemical cleaning service for industry **DOWELL**

A SERVICE SUBSIDIARY OF THE DOW CHEMICAL COMPANY

News about

B. F. Goodrich Chemical *raw materials*



HYCAR treatment of paper and paper products results in many functional and decorative improvements. Hycar nitrile latex upgrades properties, extends uses, and even more important, increases saleability.

Hycar latices make better printing surfaces. Coating paper with Hycar latex as the pigment binder gives better gloss, improved printability. Impressions are clearer, colors brighter, and less ink is used.

Hycar latices make stronger papers. Hycar provides better tensile, burst, tear, and edge strengths, excellent stretch, improved puncture resistance, and greater folding endurance. Hycar treated papers offer more resistance to scuff and abrasion, to chemicals and solvents, to grease and oil.

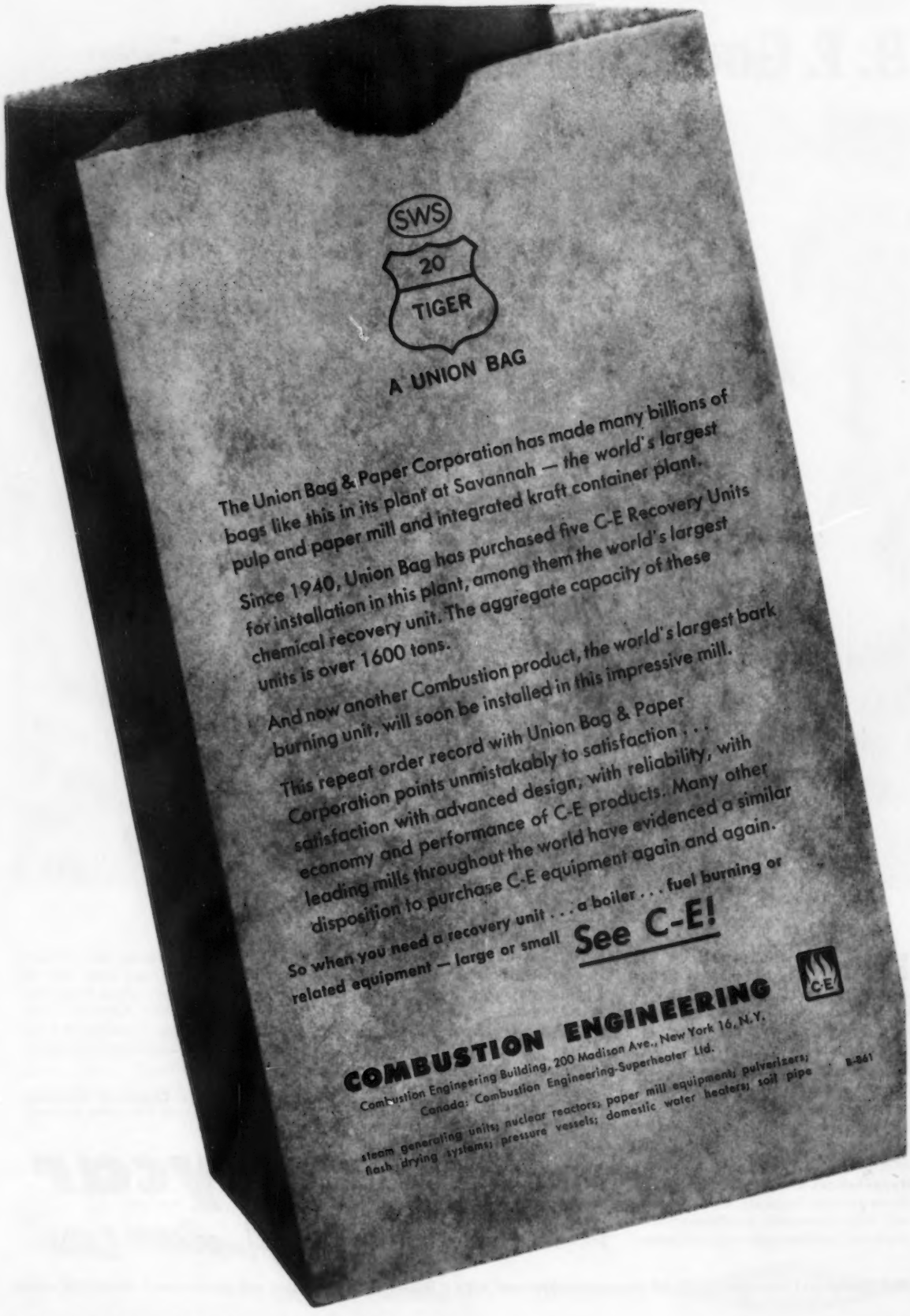
Hycar latices are easy to apply. Depending on desired end characteristics, Hycar latex is applied by beater addition, saturation, or coating. Hycar latices are water dispersions, readily compatible with clays, casein, alpha protein, phenolic resins, and other materials used to provide special characteristics.

Hycar points the way to better profits for paper manufacturers, converters, packagers, and industrial users. Hycar holds the answer to many papermaking problems both in improving old products and in developing new ones. For the complete Hycar story, please write Dept. EO-5, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ontario.

B. F. Goodrich Chemical Company
A Division of The B. F. Goodrich Company

Hycar
Reg. U.S. Pat. Off.
American Latex

GEON polyvinyl materials • HYCAR American rubber and latex • GOOD-RITE chemicals and plasticizers • HARMON colors


SWS
20
TIGER
A UNION BAG
The Union Bag & Paper Corporation has made many billions of bags like this in its plant at Savannah — the world's largest pulp and paper mill and integrated kraft container plant.
Since 1940, Union Bag has purchased five C-E Recovery Units for installation in this plant, among them the world's largest chemical recovery unit. The aggregate capacity of these units is over 1600 tons.
And now another Combustion product, the world's largest bark burning unit, will soon be installed in this impressive mill.
This repeat order record with Union Bag & Paper Corporation points unmistakably to satisfaction . . . satisfaction with advanced design, with reliability, with economy and performance of C-E products. Many other leading mills throughout the world have evidenced a similar disposition to purchase C-E equipment again and again.
So when you need a recovery unit . . . a boiler . . . fuel burning or related equipment — large or small See C-E!
COMBUSTION ENGINEERING
Combustion Engineering Building, 200 Madison Ave., New York 16, N.Y.
Canada: Combustion Engineering-Superheater Ltd.
steam generating units; nuclear reactors; paper mill equipment; pulverizers; flash drying systems; pressure vessels; domestic water heaters; soil pipe
B-961

SUBSCRIPTIONS

U. S. $5.00 per year to pulp and paper mill and converting plant personnel, others $7.50. U. S. Possessions and Canada $7.00. Latin American Countries, $15.00, all others $20.00. Single Copies of regular editions are 25c.

Published every Monday by LOCKWOOD TRADE JOURNAL CO., INC., 15 West Forty-Seventh Street, New York 36. Phone: PLAZA 7-2370.

JOHN C. W. EVANS
EDITOR

D. BRUCE OTIS, JR.
ASSOCIATE EDITOR

DAVID M. HUNTER
ASSOCIATE EDITOR

R. E. THUEMMES
MANAGING EDITOR

ERNEST F. BARKER
FIELD EDITOR

entered as Second Class Matter at the post office at East Stroudsburg, Pa., under Act of Congress of March 3, 1879. Publication Office at Lockwood Trade Journal Co., Inc., 34 North Crystal St., East Stroudsburg, Pa. Printed in U.S.A. Copyright 1956 by Lockwood Trade Journal Co., Inc. *Paper* established Feb. 17, 1899, combined with *Paper Trade Journal* Nov. 16, 1899. *Paper* established Sept. 21, 1910, combined with *Paper Trade Journal* February 19, 1926. All rights to the above titles reserved. Contents of *Paper Trade Journal*, including all articles, illustrations, etc., are copyrighted and may not be reprinted except by permission. *Paper Trade Journal* is indexed in Industrial Arts Index and Engineering Index. Also publishers of Lockwood's Annual *Directory of the Paper and Allied Trades.*

REMEMBER THESE DATES

MAY 7-9: Coating Conference, Benjamin Franklin Hotel, Philadelphia, Pa.

JUNE 12-14: National Meeting of Superintendents Assn., Lake Placid Club, Lake Placid, N. Y.

JUNE 13-15: Summer Meeting Tech. Section, Canadian Pulp and Paper Assn., Manor Richelieu, Murray Bay, Que.

JULY 9-20: Fifth Statistical Conference co-sponsored by TAPPI and Tech. Sec., Canadian Pulp and Paper Assn., Queens University, Kingston, Ont.

PAPER TRADE JOURNAL

Published Weekly Since 1872

April 30, 1956, *Vol. 140, No. 18*

TRENDS 11

NEWS BRIEFS

Kalof Board Mill Begins Operations 13
Nat'l. Container to Spend $25 Million at Jax. 13
Manayunk Mill to Start-up Again 13
Alaska Pine Expansion Progresses 14

PAPER PEOPLE 16

OBITUARIES 17

NEW LITERATURE 17

NEWS OF CONVERTERS 18

FEATURE ARTICLES

Where's The Wood Coming From? 20
Present and long range expansion of pulp production requires more information on wood resources in each mill's area.

Lubrication Needs Better Perspective 22
Industry lubrication problems are surveyed in broader aspects.

Future of Groundwood Manufacture 24

Full Scale Trial Run on Soda Base Sulphite Liquor Recovery 29
How existing equipment was utilized in a trial of a new recovery system at full plant capacity and the results obtained.

NEW EQUIPMENT AND SUPPLIES 44

NEWS OF ASSOCIATIONS 48

PRICES OF MATERIALS AND FIBERS 54

NEWS OF SUPPLIERS 58

FIGURES OF THE WEEK 59

CLASSIFIED ADVERTISING 61

ADVERTISERS' INDEX 66

LOCKWOOD TRADE JOURNAL CO., INC., 15 W. Forty-Seventh St., N.Y. 36

Phone Plaza 7-2370

GEORGE E. LOCKWOOD, President and Treasurer
ARTHUR E. GORDON, Vice-President
FREDERICK E. WINKLER, Secretary

BRIEFS
for caustic soda buyers

New booklet
Barge delivery
Flake sizes
Drum styles

Useful facts on buying caustic soda are at your fingertips in this new pocket-size booklet.

Title: *Caustic Soda Buyer's Guide.*

Contents include a list of reasons *pro* and *con* switching from 50% to 73% liquid caustic.

There's a factual discussion of the comparative economics of both strengths, including a handy nomograph to help you figure which strength is your better buy.

The booklet also contains a nomograph that helps you estimate your liquid caustic requirements for various process solutions.

There's information on solid and flake caustic, too. Two tables show at a glance the dimensions and capacities of the many containers in which you can buy Hooker caustic soda.

Finally, there's a list of important points to consider when you're looking for a caustic soda supplier.

Check the coupon at right for a copy. Or write us if you'd like more than one.

Can you save buying by barge?

If you use large tonnages of 50% liquid caustic soda, and can receive by

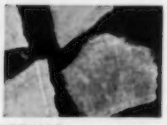
water, you may cut freight and handling costs substantially with barge service.

All Hooker plants and caustic terminals offer barge service as well as tank car service, since all are located on deep water.

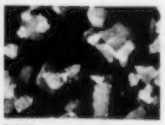
If you think there's a possible saving here, one of our representatives will be glad to discuss barge delivery with you.

Which flake size? It's easy to be sure of the best possible caustic soda flake size for your process, when you buy Hooker caustic.

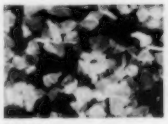
You have your choice of the four sizes here—all shown actual size.



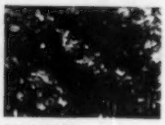
REGULAR



FINE



CRYSTAL



POWDERED

Regular, fine, and *crystal* flake are non-dusting—carefully screened for uniformity. We're extra-fussy about flake *thickness,* too. These flakes are hefty enough to take the jolts and jouncing of transit, and still reach you at full size. Yet they're thin enough to dissolve quickly when you're ready to put them to work.

For advice on the best flake size for your needs, write us, outlining the intended use.

Which drum style? You can order Hooker flake caustic soda in either of two drum styles.

The widely-used 400-pound drum shown above has a 14-inch opening that makes emptying safe and easy. The lid clamps on tight to protect contents in transit and storage.

Or you may prefer the full-open-head drum (not shown here). It gives you extra convenience in handling, and you can re-use the drum for many purposes. It costs a bit more than the 14-inch-opening drum.

Check items you'd like to receive:

- ☐ *Caustic Soda Buyer's Guide*

Technical data on:

- ☐ 50% Liquid Caustic Soda
- ☐ 73% Liquid Caustic Soda
- ☐ Flake Caustic Soda

For information on these other Hooker chemicals used in the pulp and paper industry, check below:

- ☐ Muriatic Acid
- ☐ Sodium Sulfide
- ☐ Sodium Sulfhydrate

Clip and mail to us with your name, title, company address.

HOOKER CHEMICALS & PLASTICS

HOOKER ELECTROCHEMICAL COMPANY

1804 FORTY-SEVENTH STREET, NIAGARA FALLS, N. Y.

NIAGARA FALLS • TACOMA • MONTAGUE, MICH. • NEW YORK • CHICAGO • LOS ANGELES

6-723

TD-4 SLITTER-REWINDER...

for converting operations on paper, film, foil, textiles and board.

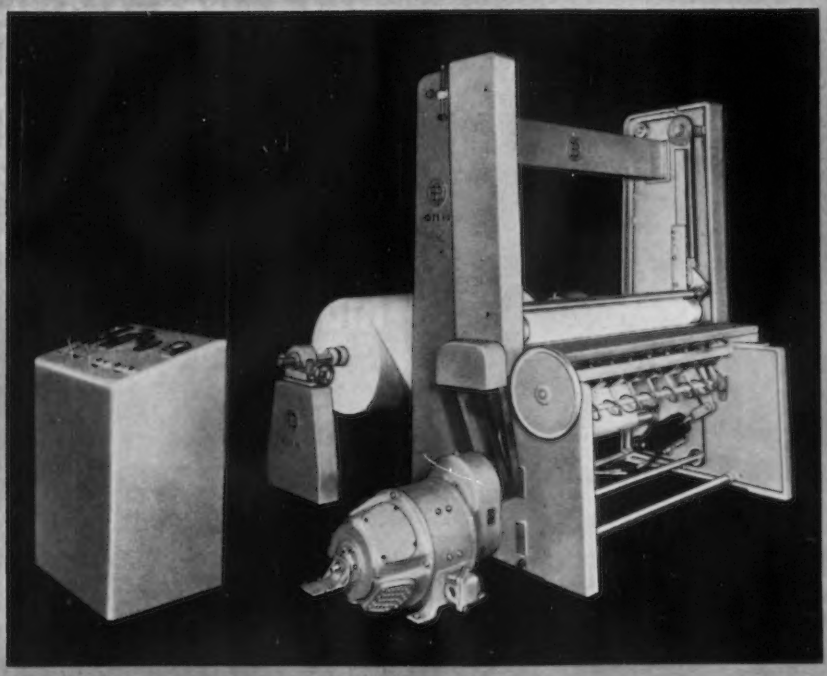
a new **Dilts** product

This modern machine based on proved principles of slitting and rewinding incorporates major design improvements.

These improved designs feature a riding roll overdrive insuring tight starts, controlled pneumatic engagement of slitters, ball bearing mounted and positive axial locking of core winding shaft and extensive use of standard and readily available commercial items.

The TD-4 has 4" diameter drums, 30" rewind capacity and can be furnished with shear or score type slitting. It is designed in standard widths of 42", 52" and 62" and operates at speeds to 1000 fpm. Other Dilts models are available for rolls up to 72" in diameter and widths to 130"

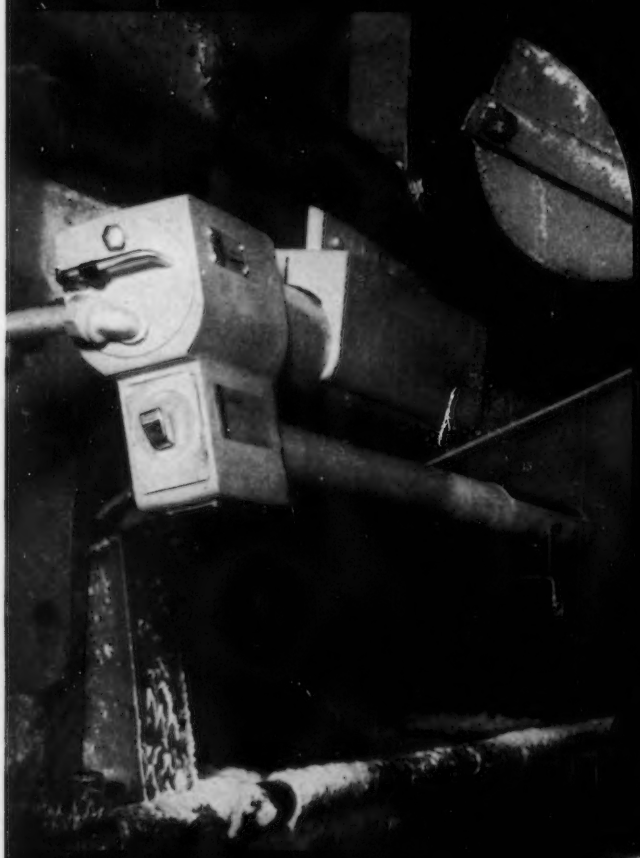
Write for Specification Sheet 105 on the TD-4.



The BLACK-CLAWSON Company

DILTS DIVISION • FULTON, N. Y.

Now--HUYCK INTRODUCES TO

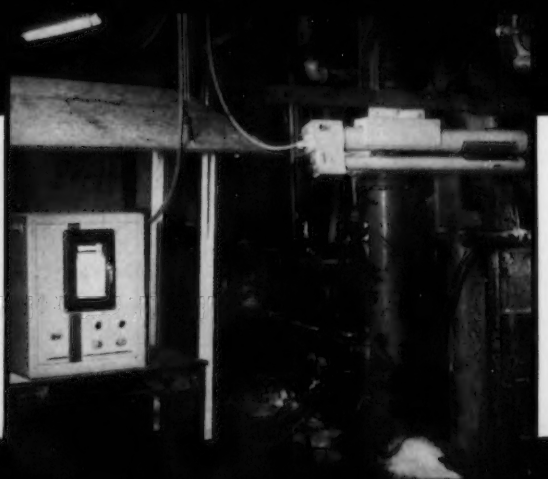


Photo, courtesy of Erving Paper Mills, Erving, Mass.

Another Huyck *plus service* for paper-makers . . . *New* wonder-working BETA RAY GAUGE measures moisture content of felts *in operation* on paper machines!

Beta Ray Gauge in use by Huyck to measure the moisture content of running felts on a paper machine.

We look forward to greeting YOU at—
37TH ANNUAL CONVENTION
AMERICAN PULP and PAPER MILL SUPERINTENDENTS ASSOCIATION
JUNE 12 to 14
LAKE PLACID CLUB
ESSEX COUNTY, N.Y.



Photograph showing the simplicity and ease of installing the Beta Ray Gauge on the press section.

Photo, courtesy of Erving Paper Mills, Erving, Mass.

NEW *ATOMIC AGE* INSTRUMENT *MODERN FELTMAKING!*

Always in the past, it was necessary for papermakers to rely on indirect methods of measuring the moisture content or water removal ability of felts. Because this was true, the water removal performance of felts could not be measured accurately. Nor was it possible to determine the rate and extent of loading of felts during operation.

Noting the great strides the paper industry was making in using the Beta Ray Gauge for basis weight control, Huyck quickly grasped the significance of the instrument, seeing how it could be applied to the press section problems of papermakers.

Because of Huyck's discovery of this *new* use for the Beta Ray Gauge, it is now possible to measure the moisture content of running felts *precisely and quickly* while they're in operation on paper machines. Moreover, the measurements taken by this wonder-working, atomic age instrument permit the direct and immediate observation of the effect of modifications of felt design . . . adjustments of press roll pressures or suction and the functioning of felt cleaning equipment.

The application of this *new* approach in a few representative paper mills is leading to advances in felt design which will enable all users of *new* Huyck felts to meet the *new* requirements resulting from development trends in the paper industry.

This *newest* of Huyck's *plus services* to papermakers paves the way to more favorable operating conditions, assuring better production at lower felt cost per ton. Your Huyck Sales Engineer or Field Service Engineer will be glad to tell you more about it.

NEW! HUYCK FELTS

FIRST IN QUALITY . . FIRST IN SERVICE

F. C. HUYCK & SONS • Established 1870
Rensselaer, New York • Aliceville, Alabama
IN CANADA: KENWOOD MILLS LTD.
Arnprior, Ontario • Established 1918

Huyck engineer reading Beta Ray Gauge to determine felt and press section efficiency.
Photo, courtesy of Erving Paper Mills, Erving, Mass.

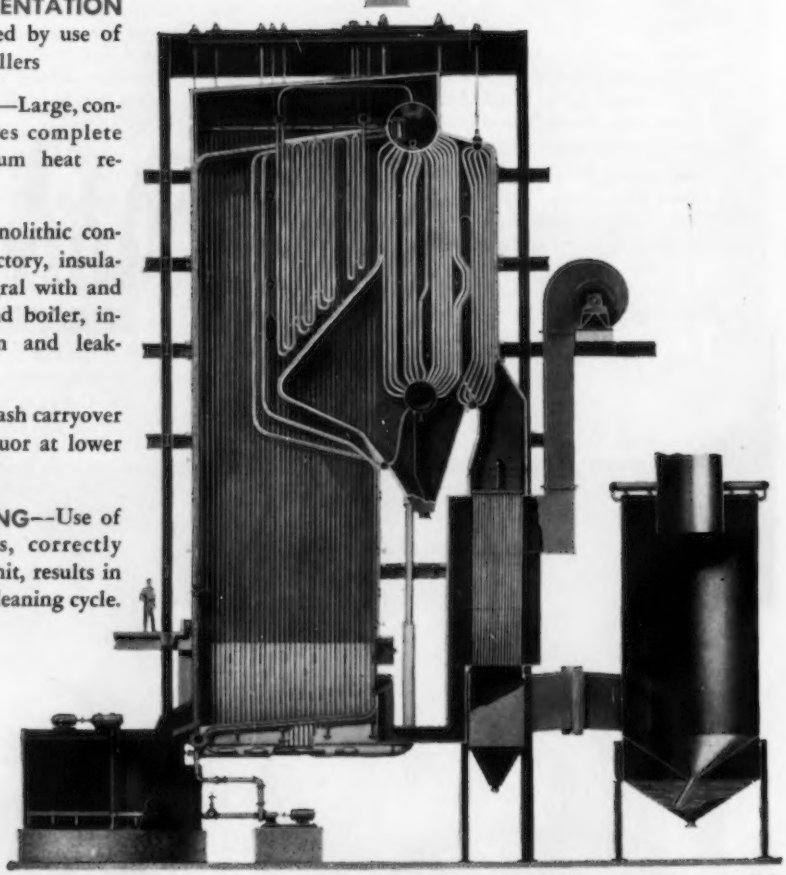
Closeup showing Beta Ray Gauge in standby position between measurements.
Photo, courtesy of Finch, Pruyn & Co., Glens Falls, N. Y.

Improved Design Features of B&W Recovery Unit assure . . .

MAXIMUM EFFICIENCY

in Chemical and Heat Recovery

- **COMPLETE INSTRUMENTATION** —Combustion is stabilized by use of automatic air-flow controllers
- **LOW FURNACE DUTY**—Large, conservative furnace assures complete combustion and maximum heat recovery
- **TIGHT SETTING** — Monolithic construction, in which refractory, insulation and casing are integral with and supported on furnace and boiler, insures uniform expansion and leakproof setting
- **CLEAN BOILER**—Low ash carryover is the result of firing liquor at lower per cent solids
- **NO ROUTINE LANCING**—Use of improved soot blowers, correctly located in the recovery unit, results in a thorough and efficient cleaning cycle.



Typical modern B&W Two-Drum Recovery Unit equipped with B&W Cyclone Evaporator.

B&W

BABCOCK & WILCOX

THE BABCOCK & WILCOX COMPANY
161 East 42nd Street
New York 17, N. Y.

P-780

TRENDS

APRIL 30, 1956

A Warning Flag For Business

The Business pace continued brisk during the week, but cautionary signs were evident on the nation's horizon. Late figures support contention that 1956 will be big year. Employment is strong. Early housing declines were more than balanced by new wave of contract awards. Commercial and industrial construction outlays are currently at record heights. March machine tool orders hit $95.4 million, 10.8 per cent above February, and 51 per cent over March 1955. Auto output, down in first quarter, doesn't look so bad if you average 6 million units dealers expect to sell this year with high 1955 totals. Seven million car result is a crop which tops all years prior to 1955. Steel mills will continue capacity operations through June, and producers are optimistic for balance of year. On pessimistic side, growing shortage of investment funds may cut short industry's expansion plans, main prop of current boom. Last week Treasury borrowing costs on 91-day bills, reflecting tight money market, advanced to their highest level since F.D.R.'s 1933 "Bank Holiday". February inventories hit $83.5 billion, are rising steadily, and are currently up $6 billion from a year ago, partially a result of the accelerated tempo.

Earnings Reports All Way Up

Whopping sales and earnings are indicated for paper and paperboard firms from first quarter statements to stockholders. New income records are the rule, as the industry at all levels continues high gear operations. Watch for a complete summary prepared by P.T.J.

Canadian Investment Picture Revealed

A report of foreign investments in Canada, recently released by the Dominion Bureau of Statistics at Ottawa, is causing something of a stir in financial circles north of the border. U. S. dollars, it was pointed out, have been concentrated in Canada's seven "most vital" growth industries. In the pulp and paper field, foreign interests actually control northern production, with all foreign investment amounting to 55 per cent. At present, U. S. dollars account for 42 per cent of the $1.28 billion total, and compare with 45 per cent for Canada. What is causing the most alarm in many circles is that this outside investment trend appears to be a continuing one. However, in answer to the cry of one northern statesman that "Canada is selling its birthright", many Canadians agree that this financial penetration has done their economy much real good.

Increase Unmatched

Newsprint mills in Canada and the United States will boost capacity 25 per cent by the end of 1958, for the greatest expansion in the industry's history, members of the American Newspaper Publishers Association were told at their annual meeting in New York this week.

Slight Softening Noted

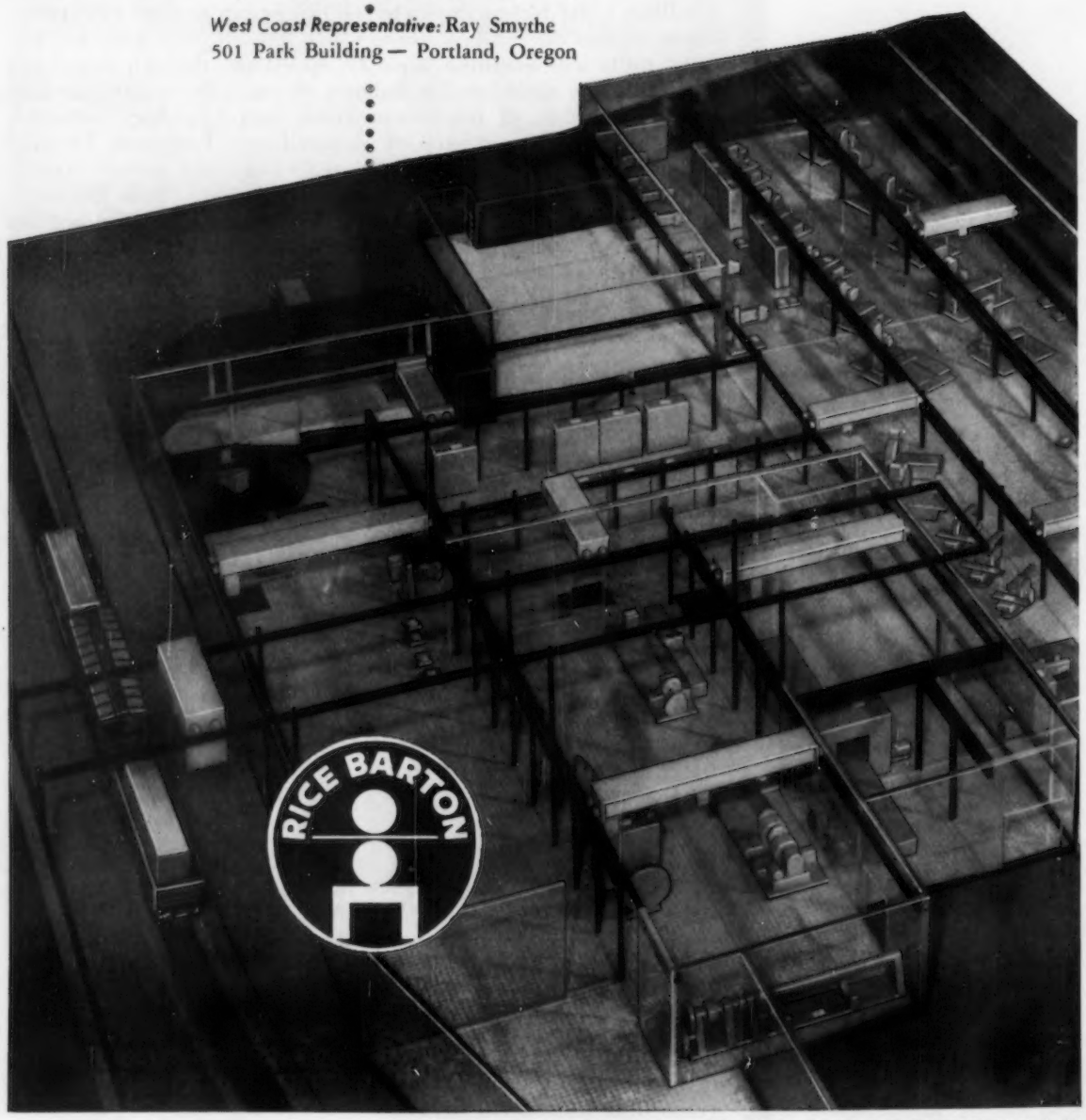
"There appears to be some slight softening of demand in the paper market," Sydney Ferguson, Mead Corp. board chairman told stockholders during the week. The firm reported a 25 per cent increase in first quarter earnings, and Mr. Ferguson stated he expects this year will be a better one than last.

ENGINEERED EXPANSION

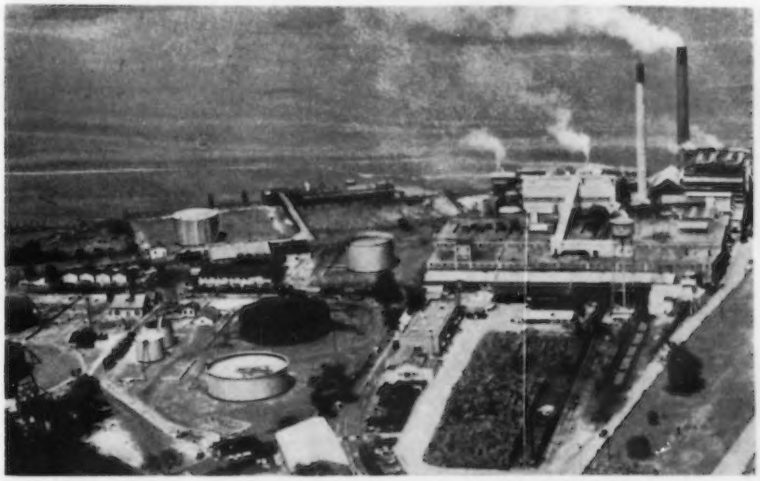
—of our plant
means faster deliveries
of advanced design
papermaking machines.

RICE BARTON CORPORATION
Worcester, Massachusetts
Paper Machine Builders Since 1837

West Coast Representative: Ray Smythe
501 Park Building — Portland, Oregon



PORTION OF SCALE MACHINE TOOL LAYOUT USED IN PLANNING NEW FACILITIES



National Container's Jacksonville Mill

Nat'l. Container to Spend $25,000,000

The National Container Corp. will soon undertake a $25 million expansion of its pulp and paper mill in Jacksonville, Fla. The paper company has acquired from the Southern Railway a site, adjoining the paper mill, that is double the size of the present site. A deed filed with the clerk of the Circuit Court at Jacksonville indicated the consideration was about $200,000.

Although details of the plant expansion were not immediately announced at Jacksonville, a company spokesman said that the program would run to around $25 million. The Jacksonville plant of National Container began operations in 1938. The mill capacity is 475 tons a day. Several years ago an expansion of the Jacksonville plant was considered, but instead an entirely new plant was built near Valdosta, Ga., and went into operation in 1954.

Expansion of this National Container plant will be the second large paper mill project in Jacksonville. St. Regis Paper Co. is engaged in a $40 million expansion program.

Kalof Board Mill to Start-up Early May

The paperboard mill being built near Port Hueneme, Calif., for Kalof & Co. will get into operation early in May. The mill will manufacture all grades of paperboard for folding and setup box trade requirements and also liner board and .009 corrugating medium for the shipping container industry.

The stock preparation equipment embodies two large Shartle hydrapulpers, two Claflin refiners, four Shartle Miami No. 2 jordans and a stock cleaning system together with all the required accessories.

The machine will trim approximately 136" to 140" depending upon the weight and grade of paper being manufactured. It embodies a six cylinder wet end, all of the vats being of Black-Clawson manufacture, one of which is a Uni-flo vat and provisions have been made for a seventh vat to be added later, which will probably be a Uni-flo vat also. There are four main presses, one of which is a suction press; two stacks of cylinders, a sheet cutter, reel and roll winder, together with dryers sufficient to give an initial capacity of approximately 115 tons. Additional dryers will be installed later to augment the capacity, for the stock preparation system is capable of handling in excess of 200 tons per day.

About 2300 connected horsepower of electric motors will be supplied by power purchased from the local power company and steam will be generated in a 50,000 pounds per hour Edgemoor steam generator. The prime mover for the machine will be a steam driven Terry turbine.

The plant will be under the supervision of Robert W. Stevens, papermill consultant. The supervisory staff will consist of Claude Sharp, mill superintendent; Walter Beam, master mechanic; James Will, in charge of the power plant; and Robert W. Stevens, Jr., formerly a Captain in the Corps of Engineers, will be plant engineer.

S. J. Kalof, president of the company, has, for several years, operated shipping container factories and will continue to do so. He also operates the paperboard mill at Richmond, Calif. known as the Quaker Container Corp.

Manayunk Mill Schedules Start Up

Pencoyd Paper Co., which recently purchased the mill on Venice Island, Manayunk, Philadelphia, Pa., formerly operated by Westfield River Paper Co., is rehabilitating the plant at a cost of approximately $250,000. The facilities have been closed down for the past several years.

The new company was formed by Abe Cooper, of Watertown, N. Y., and Marvin C. Ferris, of New York City. Mr. Cooper is president of the firm and Mr. Ferris is general manager. Pencoyd will produce a wide range of specialty paper products, with particular emphasis on paper food packaging items. Operation is scheduled to start in about five weeks.

LATE FLASHES

- Strongly rumored that Scott has dropped its interest in building a large paper and/or a pulp mill in Nova Scotia.
- Federal Paperboard is said to be interested in building a box plant in Washington, Pa. A local group are endeavoring to raise $150,000 to purchase a site there as an inducement.
- Allied Paper Mills has protested the awarding of the Colorado timber contract to J & J Rogers, on basis that the bid was not for the full amount of timber.

Alaska Pine Expansion Progresses

Second phase in the $12 million modernization program of the Alaska Pine & Cellulose Ltd. at Port Alice, B.C., has now got under way. This program, which is scheduled to be completed early in 1957, includes a new machine room, installation of a modern pulp drying machine, a new digester, a finishing room, warehouse, boiler and turbo-generator.

The two-year program will raise the capacity of the Vancouver Island plant from 75,000 to 125,000 tons of chemical pulp per year for use in the manufacture of rayon, acetate, cellophane, tire cord, photographic paper and film. Shipped to the major manufacturing countries of the world is direct from the deep sea wharves at Port Alice. The company also has a pulp mill at Woodfibre and operates three sawmills, nine logging camps and two shingle mills.

The first unit of the project is now being completed, according to W. E. Breitenbach, executive vice-president. This installation includes a digester and blow pit, cooler and absorption towers and improvements in the bleach plant.

The modernization program grew out of Alaska Pine's affiliation with Rayonier Inc.

Newsprint Consumption Again Breaks Record

U. S. newsprint consumption for March and the first three months of 1956 reached another all-time high. Total estimated newsprint consumption in the U. S. for March, 1956 was 587,006 tons, compared with 577,493 tons for March, 1955. For the first three months of 1956, total U. S. newsprint consumption was 1,639,659 tons as compared with 1,562,679 tons for the same period in 1955.

Newspapers reporting to the American Newspaper Publishers Assn. consumed 446,125 tons of newsprint in March, 1956, compared with 438,895 tons in March, 1955, and 400,311 tons in March, 1954. This was an increase of 1.6% over March, 1955, and an increase of 11.4% over March 1954. There were four Sundays in each March 1956, 1955 and 1954. During the first three months of 1956, the reporting newspapers used 1,246,141 tons of newsprint, an increase of 4.9% over 1955 and an increase of 12.4% over 1954.

At the end of March, 1956 stocks of newsprint on hand were 26 days supply and 7 days supply were in transit for the average of all daily newspapers reporting to the ANPA compared with 27 days supply on hand and 8 days supply in transit at end of February, 1956. There were 27 days supply on hand and 6 days in transit at end of March, 1955 while newsprint on hand at end of March, 1954 totalled 38 days supply with 7 days supply in transit.

Summer Course in Paper

Late reservations are being accepted for the summer course in "Paper—Its Properties and Uses" to be given under the auspices of the Boston Paper Trade Assn. and the New England Merchants Assn. at Lowell Technological Institute's department of paper engineering June 18-26.

Detailed information may be obtained from and inquiries addressed to Prof. John Lewis, Director of Paper Summer Course, Lowell Technological Institute, Lowell, Mass. Applications must be sent before May 18 to Professor Lewis with a deposit of $10, which will be returned if the application cannot be accepted.

St. Regis Opens Chicago Pulp Sales Office

St. Regis Paper Co. has opened a pulp sales office in Chicago, located at 18 South Michigan Ave. Ralph Wehmhoff, previously with the Tacoma, Wash. mill of St. Regis, was named as pulp representative for the new Kraft Division office.

The pulp sales office will handle the sale of bleached pulp from the Tacoma, Wash. mill of St. Regis, as well as bleached pulp from the new mill under construction in Hinton, Alberta, Canada.

Paper and Board Production

According to the American Paper and Pulp Association, the ratio of the United States production to mill capacity for the week ending April 14, 1956, was 103.5 percent, compared with 98.8 percent, revised, for the preceding week. The ratio was 97.1 percent for the corresponding week a year ago.

The paperboard production ratio for the week ending April 14, 1956, was 100 percent, compared with 94 percent for the preceding week and 92 percent for the corresponding week last year.

(Detailed statistics on page 59.)

March Newsprint Statistics

Production and shipments of newsprint in North America during March, 1956 amounted to 701,866 tons—a volume surpassing that of any month on record—and to 682,067 tons respectively, compared with corresponding totals of 666,409 tons and 638,922 tons in March, 1955, according to the Newsprint Service Bureau. Output in the United States was 148,970 tons—an all-time monthly peak—and shipments were 147,300 tons while Canadian (including Newfoundland) production amounted to the record monthly high of 552,896 tons and shipments to 534,767 tons.

The 418,894 tons turned out by United States mills through the end of March this year was 62,803 tons or 17.6 percent greater than in the first three months of 1955 while output in Canada of 1,590,888 tons also was 81,651 tons or 5.4 percent above that in the corresponding period of last year, thus the continental increase amounted to 144,454 tons or 7.7 percent.

North American manufacturers' stocks on March 31, 1956 aggregated 139,680 tons compared with 119,881 tons on the last day of the preceding month and 199,498 tons at the end of March, 1955. The continental total was composed of 7,441 tons and 132,239 tons held by United States and Canadian mills respectively and inventories were lower than a year ago by 176 tons in the former instance and by 59,642 tons in the latter.

C-Z Purchases Natural Gas

The Portland, Ore. Gas & Coke Co. has announced the signing by Crown Zellerbach Corp. of a contract for the purchase of about $1,500,000 worth of natural gas a year for five years, for use in Crown's papermaking operations at its West Linn, Ore., and Camas, Wash., plants.

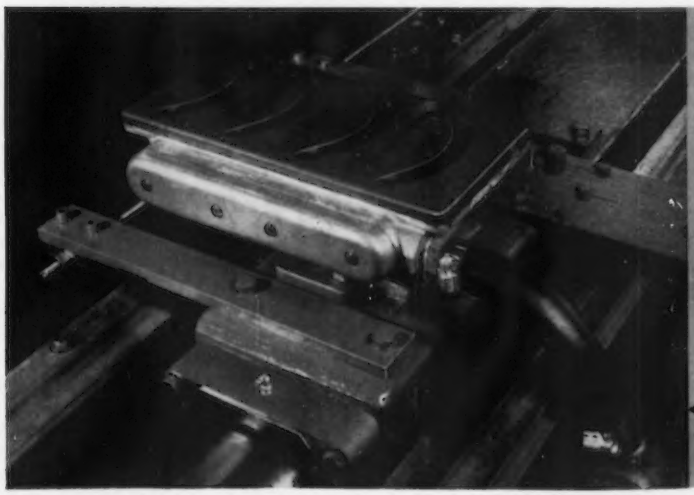
Oregon and Washington will receive their first natural gas about August 1 through a 1460-mile pipeline, nearing completion, from the San Juan fields in Colorado and New Mexico. An additional supply will be received later through a pipeline now being laid from the Peace River fields in British Columbia and Alberta, Canada.

The announcement said that C-Z plans to partially convert its West Linn and Camas papermaking operations to gas, and that when the changeover is made the West Linn plant will use some 80,000 therms of natural gas a day. The Camas mill has been signed up for 120,000 therms a day.

Natural gas service to the mills, on an interruptible basis, is scheduled to start about October 1.

Run at Top Speed Right through the Week by VICKERY CONDITIONING your FELTS

You won't have to stop your paper machine during the week to unclog your press felts when they're equipped with Vickery Felt Conditioners. This low-cost protection against high-cost shutdowns also results in lower drying costs, improved uniformity of finish and, in many cases, increased felt life.



CONDITION WET FELTS, TOO

With the new Vickery Wet Felt Conditioner you can keep cylinder machine top and bottom felts continuously open and clean. What's more, you can do it *without showers, without whippers.*

One of the conditioning boxes on the Vickery Wet Felt Conditioner.

Write for full information, recommenaations and layouts.

BIRD MACHINE COMPANY

SOUTH WALPOLE, MASS.

REGIONAL OFFICES: EVANSTON, ILLINOIS
PORTLAND, OREGON • ATLANTA, GEORGIA

Canadian Manufacturers of Bird Machinery
CANADIAN INGERSOLL-RAND COMPANY, Limited, Montreal

PAPER PEOPLE

E. Howard Smith

A. J. Philip

Heads Howard Smith Board

E. Howard Smith, president of Howard Smith Paper Mills Ltd. and associated companies, has been elected chairman of the board. He will continue to serve as president of the company. A. J. Philip, vice-president and general manager of Canada Paper Co., has been elected a director of Howard Smith Paper Mills Ltd. Mr. Philip has been associated with the Howard Smith organization for the past 30 years.

New V.-P.'s at Fiberboard

B. P. Altick has been named vice-president in charge of marketing activities of Fiberboard Paper Products Co., San Francisco, Calif. R. E. Bundy was elected vice-president in charge of group facilities and planning, B. R. Colkett, vice-president and secretary; A. S. Halley, vice-president for finance; J. F. Havard, vice-president in charge of manufacturing, and W. K. Spence, vice-president for personnel.

Two Paper Men on Nuclear Energy Committee

Florida Governor LeRoy Collins, who is chairman of the Southern Regional Educational Board, has named two pulp and paper executives to an advisory committee for a region-wide work conference on nuclear energy. During the work conference, to be held at Redington Beach, Fla., August 2-4, a report for the Southern Governors Conference will be presented on what the South needs to take full advantage of its opportunities for development through nuclear energy. Pulp and paper men on the committee are: G. W. E. Nicholson, president Tennessee River Pulp & Paper Co. and Nicholas Shoumatoff, West Virginia Pulp & Paper Co.

Coos Bay Transfers

Don Pederson, plant accountant and office manager of the Coos Bay Pulp Corp., Coos Bay, Ore., and Robert Dyer, plant personnel manager, have been transferred to other operations of the firm effective May 15. Mr. Pederson, who has been with the company ten years, will go to Vancouver Island, B. C., to be in charge of construction accounting for the new 450-ton pulp mill being constructed by British Columbia Forest Products, which is associated with Scott Paper Co. After completion of the mill, Mr. Pederson will set up the accounting department.

Mr. Dyer, who has been assistant plant accountant since 1951, will go to Winslow, Me., as assistant personnel manager. He has been with the company since 1950.

Carl Plumlee

Heads New Dierks Mill

J. Carl Plumlee, recently sales service expert for Bauer Brothers, has accepted a position as general manager of Dierks Lumber Company's new 150-ton kraft board mill in Pine Bluff, Ark. Mr. Plumlee was a kraft board superintendent with both Macon Kraft Corp. and Fleming & Sons.

Doeskin Expands Marketing Staff

Doeskin Products, Inc. has announced a major expansion of the company's Marketing Division.

Grant P. Stinchfield, formerly director of sales, has been promoted to vice-president in charge of sales, and Raymond F. Marcus, formerly merchandise manager, has been promoted to vice-president and administrative assistant to the president. John A. McQuade has joined the company as general sales manager. James P. Costello has joined the company as advertising and merchandise manager. W. G. Leathers, formerly executive secretary of the National Paper Trades Assn. was named general manager of the Industrial Division specializing in Creped Cellulose Wadding. R. E. Partenheimer who has been assistant to the director of sales was named assistant general sales manager.

R. J. Katz was named assistant merchandise and advertising manager.

Executive and Managerial Changes at C.-Z.

Crown Zellerbach has made six executive and management changes in the United States and Canada.

Peter T. Sinclair has been elected president and chief executive officer of Crown Zellerbach Canada Ltd. in Vancouver, B. C. He succeeds Frank N. Youngman who continues to serve as chairman of the board and of its executive committee. Mr. Sinclair, formerly vice-president for manufacturing of Crown Zellerbach in San Francisco, was also elected a director of Crown Zellerbach Canada; a director and chairman of the board of Canadian Western Lumber Co., and president of Elk Falls Co.

E. W. Erickson, assistant vice-president at Crown Zellerbach headquarters in San Francisco, is assuming broader responsibilities for Crown Zellerbach's manufacturing operations.

G. H. Gallaway, manager of Crown Zellerbach's Camas, Wash. paper mill, has been appointed assistant vice-president for manufacturing and converting in San Francisco.

H. F. Carpenter, manager of Crown Zellerbach's Port Angeles, Wash. newsprint mill, becomes manager of printing papers production in San Francisco.

F. O. Boylon, assistant manager at Camas, steps up to manager of the mill. F. W. Flynn, assistant manager at the Port Townsend, Wash. mill, becomes manager of the Port Angeles mill.

R. A. Butler, manager of pulp production at Camas, moves into Boylen's place, and Clarence P. Brown, paper mill superintendent for wrapping, becomes paper production superintendent.

Paul H. Roberts

Named V.-P. i/c Sales

Election of Paul H. Roberts as vice-president in charge of central sales of the Hinde & Dauch Paper Co., Sandusky, Ohio, has been announced by Charles E. Frohman, president.

In his new position, Mr. Roberts will be responsible for the sale of products made at Hinde & Dauch factories in Sandusky, Ohio, Detroit and a new plant now under construction at Eaton, Ohio.

A veteran of the corrugated box business, Roberts began his career with Hinde & Dauch in 1927. He joined the company's sales department in 1936, and in 1952 was appointed Sandusky district sales manager, the position he held prior to assuming his present responsibility.

Reed S. MacKenzie

Named Secretary Of Rapinwax

Reed S. MacKenzie has been appointed secretary and assistant treasurer of The Rap-in-Wax Paper Co., Minneapolis, Minn.

Mr. MacKenzie joined Rap-in-Wax in 1940 as a junior accountant. He returned to Rap-in-Wax in 1945, after serving in the Armed Forces, to become chief accountant. In 1954 he was appointed assistant secretary treasurer.

Schmick Joins Schwartz

J. Allen Schmick has been appointed general sales manager for the Schwarz Paper Co. of Chicago to succeed William A. Martin who has resigned.

Mr. Schmick was formerly national manager of sales of Cincinnati Industries of Cincinnati, Ohio.

OBITUARIES

George Sherwood, who retired from Sutherland Paper Co. in 1952, died April 10 after a long illness. Before retirement, Mr. Sherwood had worked at Division Two, Wax-Glue Department, and had a record of over 30 years with the company.

Charles H. Hahn, 59, sales engineer for the D. J. Murray Manufacturing Co., Wausau, Wis., died April 17. He had been with the firm since 1916 and was purchasing agent for a time until he became a sales engineer 25 years ago.

William M. Egan, 52, maintenance superintendent at the Pioneer Paper Co., Kalamazoo, Mich., died at Borgess Hospital April 17 after a three days illness.

Franklin Evans Miller, 86, retired vice-president of the Central Ohio Paper Co., died April 16 in Columbus, Ohio. He had been ill about a week.

Mr. Miller had been with the Central Ohio Paper Co. for 69 years prior to his retirement from the vice-presidency in 1955. He was a brother of the late O. A. Miller, former chairman of the board of the company.

Ernest C. Rossiter, retired president of the Southern Paperboard Corp., died April 17 in Savannah, Ga.

Mr. Rossiter moved to Savannah in 1946 as consultant engineer for the Robert Gair Co., Inc. handling details for the $11 million plant being erected for Southern Paperboard Corp. at Port Wentworth.

A few months later he was elected president of the corporation, which is a subsidiary of Gair. He retired in 1949.

Sam Manheim, 65, who was specially department manager of Louisiana Paper Co., Shreveport, La., died April 9 after a brief illness.

D. S. Gottesman, president of Gottesman Co. Inc. died in New York on April 21st. Mr. Gottesman was closely associated with the pulp and paper industry in this country for many years, both as a sales agent for wood pulp and through his important holdings in a number of large pulp and paper companies.

NEW LITERATURE

AURORA NONCLOG PUMPS. (Bulletin 121-A) Covers entire line of non-clog pumps used to handle the liquid components of industrial processes and waste, as well as pumping applications. Also includes specifications. **Aurora Pump Div., N. Y. Air Brake Co.,** Loucks at Dearborn St., Aurora, Ill.

A-C POLYETHYLENE. (Bulletin 116) Describes currently available grades of low molecular weight A-C polyethylene; gives actual and suggested end uses and lists local sales offices and telephone numbers. **Semet-Solvay Petrochemical Div., Allied Chemical & Dye Corp.,** 40 Rector St., New York 6, N. Y.

B&W CROLOY STEEL PIPE AND TUBING. (Technical Data Card 163A) Furnishes information on analysis, mechanical and physical properties and creep and rupture data on various tubing alloys which are satisfactory in elevated temperature service. **Tubular Products Div., Babcock & Wilcox Co.,** Beaver Falls, Pa.

CATERPILLAR TRACTORS. (Forms 31872, 31913, 31921) Explains advantages of tractor-mounting a ripper; presents latest news—the 977 Traxcavator; features the D6, D4 and D2 tractors. **Caterpillar Tractor Co.,** 600 W. Washington St., Peoria, Ill.

DOWELL ACIDIZING SERVICE FOR WATER WELLS. (Bulletin) Contains technical information on how to increase water yield by enlarging formation channels and removing scale deposits from pumps and screens. **Dowell Inc.,** P.O. Box 536, Tulsa 1, Oklahoma.

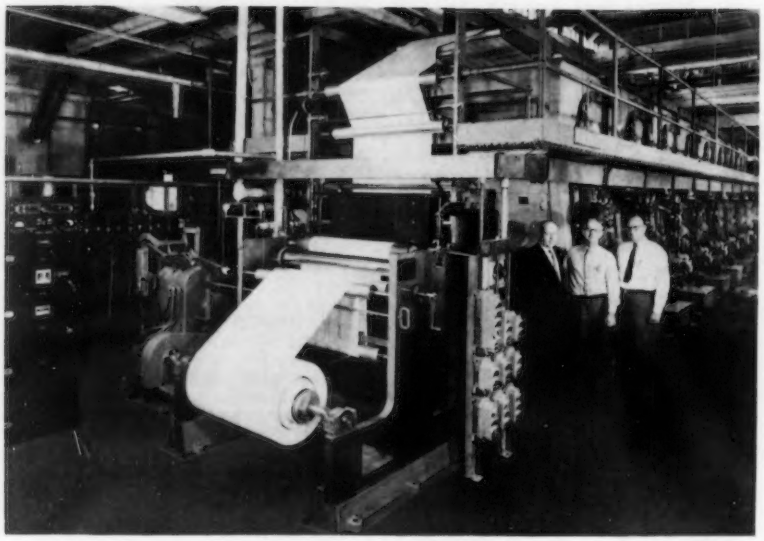
GLASS PIPE AND FITTINGS. (Catalogue 80-10) Describes line fabricated from Pyrex glass tubing which are designed primarily for laboratory or pilot plant use and other special services. **Fischer & Porter Co.,** 683 Jacksonville Rd., Hatboro, Pa.

SHAFER SELF-ALIGNING ROLLER BEARINGS. (Catalogue 55) Contains specification and data pages on all models of Shafer units. Also describes the Shafer self-aligning principle of concave rollers running between convex raceway, micro-lock adjustment, Shafer "Z" seal, etc. **Chain Belt Co.,** 4701 Greenfield Ave., Milwaukee 1, Wis.

THE STORY OF UNITANE TiO_2. (Brochure) Tells how Unitane titanium dioxide has raised the quality and service standards of objects all around us. Interspersed with illustrations it also tells about the plant at Savannah, Ga. **American Cyanamid Co.,** 30 Rockefeller Plaza, New York 20, N. Y.

COLUMBIA SOUTHERN CHEMICALS. (Quarterly Magazine) The purpose of this magazine is to make the services, products, plants, facilities and people of Columbia-Southern better known throughout industry, educational institutes and wherever there is interest in the dynamic role of chemicals. Contains five articles. **Columbia-Southern,** One Gateway Center, Pittsburgh 22, Pa.

NEWS OF CONVERTERS OF PAPER AND PAPERBOARD



AS IT STARTS ITS INITIAL RUN of Camay soap wrappers, Carl Ireton, Al Fleischman and Robert Eliker, all officials of Specialty Papers, stand by . . .

. . . New Eight-Color Rotogravure Press

The first eight-color, heavy-duty rotogravure press to be used in the commercial printing industry has gone into service for The Specialty Papers Co., Dayton, Ohio. The press was built and installed by the Kidder Press Co., Dover, N.H.

Robert Eliker, vice-president in charge of production for Specialty Papers, pointed out that printing in eight colors permits the truest, most realistic representation of such items as food products that the graphic arts has so far been able to achieve. He believes it constitutes a great step forward in the whole field of package production.

The Kidder Press prints all eight colors at speeds up to 1,000 f.p.m. It can print virtually every stock from tissue paper to 20-point board, aluminum foil and cellophane.

Other features of the press's versatility are that it will print many sizes of wrappers and labels, take paper up to 46 inches in width and will, when desired, print on both sides of a web. Total length of the press is 68 feet.

Operation is comparatively simple considering the many complicated operations the press performs. Each of the printing stations is equipped with photo-electric register controls. All stations are keyed to a central control panel. A Scan-a-Web device also permits the operator to examine the speeding web by presenting a stationary vision of the printed surface.

Among the concerns for whom Specialty Papers prints wrappers and labels is the Procter & Gamble Company at Cincinnati.

Carolina Paper Box Plans New Plant

The Carolina Paper Box Co. of Burlington, N. C., has announced plans to open a plant at Wilson early next fall as part of an expansion program.

The Wilson plant will manufacture set-up paper boxes, serving a radius of about fifty miles.

Schutt Changes Name, Plans Expansion

The name of the three-year-old Schutt Envelope Manufacturing Co. has been changed to Southern Envelope Manufacturers, Inc., according to John C. Schutt, president.

He said there will be no policy or personnel changes, but production facilities will be expanded in the plant at 240 NE 72nd St.

The change was made to reflect the firm's expanding market. Last May, Schutt Envelope became affiliated wit'ı the Atlanta Envelope Co. and Southern Manufacturers, Inc., of Nashville.

New Litter Bag

A litterbag—an important new weapon in the war on the trash cluttering up the American countryside — is enclosed in each copy of the Spring *Huber News*, company magazine of J. M. Huber Corp.

The bag is made of wet-strength kraft and specially treated to hold together when damp or wet. It will find wide use among motorists, picnickers and vacationists, who can place travel trash in the bag and either dispose of the entire container or empty it in a proper roadside receptacle.

Field Paper Box Combines With Terre

Field Paper Box Co. has expanded its operations by buying Terre Paper Box Co. and merging its operations and those of two previous Field plants into one large plant at 1740 N. Pulaski Road, Chicago, Ill.

To Sell for St. Regis

St. Regis Paper Co. has appoined Don R. Russell as sales representative of the Multiwall Packaging Division in the Minneapolis, Minn. office, located at 206 Foshay Tower. Mr. Russell was formerly a St. Regis salesman in Cincinnati, O.

Standard Packaging Corp. To Buy Modern Packages, Inc.

Standard Packaging Corp., of New York City, has reached an agreement to purchase Modern Packages, Inc., of Los Angeles, on a stock exchange basis.

Standard Packaging manufacturers flexible transparent packages and packaging equipment, marketed under the name of one of its subsidiaries, the Flex-Vac Division. Other organizations in the Standard Packaging family include the Fonda Container Co., St. Albans, Vt., makers of paper plates and containers, and the General Felt Co. of New York.

Modern Packages, Inc., is a producer of transparent films, laminations, and foils. Primarily a West Coast corporation, the company recently announced a high production mark of 300,000 polyethylene bags a day.

Top management of Modern Packages, Inc., will remain as principals when the plant becomes the West Coast office of Standard Packaging. O. D. Carlson, tion manager; and Roy D. Carlson conpresident of Modern Packages, will be general manager; W. R. Miller, vicepresident of Modern, is to be sales manager; William Smythe, will be productroller.

For higher wet strength with minimum add-on...

SCRIPTITE* 40

Increased cationic effect of new Monsanto resin assures more complete exhaustion!

Scriptite 40 is a *new* concept in urea formaldehyde resins for paper finishing. Extensive mill trials have demonstrated that this Monsanto urea resin provides special advantages in improved performance over competing urea resins.

Scriptite 40 will impart outstanding wet strength for your paper product—and at the same time improve dry tensile, mullen, wet rub resistance, dimensional stability and folding endurance.

Because this new water-soluble urea-type resin has been made more cationic, it is strongly attracted to the cellulose, assuring high efficiency in application. Scriptite 40 provides faster cure, and paper products maintain a higher wet strength value with less resin add-on than is usually required.

For laboratory sample of Scriptite 40 and technical bulletin, write to Monsanto Chemical Company, Plastics Division, Room 822, Springfield 2, Mass.

The Monsanto Line of Paper Resins also includes

SCRIPTITE 54 ... *for outstanding water resistance and both wet and dry rub resistance*

SCRIPTITE 52 ... *in combination with formaldehyde to give water resistance to folding boxboard and to jute liner*

SCRIPTITE 50 ... *for unsurpassed printability and improved surface characteristics on boxboard*

SCRIPTITE 33 ... *a melamine wet-strength resin*

MONSANTO

*SCRIPTITE: REG. U. S. PAT. OFF.

Where's the Wood Coming From?

Harold E. Young

Associate Professor of Forest Mensuration,
Forestry Department, University of Maine

Need for precise estimates of the availability and potential supply of wood for each mill can be met at reasonable cost. Many existing methods may give large errors and the cost of a conventional ground inventory is prohibitive. A combination of aeroplane, and field work with modern statistical methods can give quite precise estimates. Existing pulp mills need such information to survive and must have it to grow.

Not long ago a respected senior member of the paper industry made a statement concerning the relationship between the future success of individual pulp and paper companies and ownership of timberland. The implication was that rapid expansion of this fourth largest industry in the United States might result in insufficient supplies of wood for some mills and thereby force them out of business. It is entirely possible and even likely that this will happen in some instances.

It is the thesis of this paper that:

1—Most mills do not need to purchase sufficient timberland to meet their present or future wood requirements.

2—Intelligent long-range wood procurement planning, utilizing company owned timberland and all other possible sources, must be put into effect in order to provide the 48 million cords annually predicted as the industry requirement in 1975. Now that the government has prepared a Timber Resource Review for the nation, it seems appropriate for each company to prepare a similar estimate tailored to meet its individual needs.

For each mill there is a variable working radius for wood delivered by truck, train or boat. It is essential to evaluate conditions in each transportation area with respect to the forest producing land in terms of the volume of standing timber, growth rate and drain. Equally essential is an analysis of the forest land with respect to maximum productivity as a result of intensive management, and an estimate of the portion of the harvest within a particular working area that can be expected by the company concerned.

Evaluation Methods

An area within 50-mile radius of a mill manufacturing pulp includes slightly over five million acres, of which at least half is likely to be forested. In New England a conventional ground inventory of an area of such magnitude would cost between 20 and 50-cents per acre or from $500,000 to $1,250,000. By using modern airphoto interpretation techniques and ground checking, the inventory would cost between 7 and 20-cents per acre or between $175,000 and $500,000 dependent upon the intensity of the survey. Both of these methods provide adequate information required for long range planning. For planning purposes the cost of obtaining the necessary information on a five million acre area, or within a trucking radius of 50 miles, is excessively high. For a rail radius of 200 miles from a mill the cost would be astronomical.

A number of paper companies that required data for long range planning purposes conducted cost studies and arrived at figures comparable with those cited above. Consequently a number of methods have been devised to obtain planning information at considerably less expense. Different techniques include:

1—Traveling available roads to determine conditions based on superficial and limited observations.

2—Traveling available roads and using hilltops as vantage points from which to sketch information on Geological Survey topographic maps.

3—Attempting to extract information from Forest Survey and other reports, containing sketchy details generally inadequate for planning purposes for a specific mill.

4—Flying over the area at low altitude and sketching information on Geological Survey topographic maps.

5—Very limited field sampling without area control.

These rough methods as well as others of a similar nature have been used as the basis for planning estimates. In turn the admittedly crude estimates have been used to assure continued supplies of wood to justify plant expansions involving many millions of dollars.

Each of these methods produces results at low cost, but the very nature of each method is such that the possible error of estimate may be large. With techniques currently available there is no reason to continue using such antiquated methods. The capital investment represented by the paper industry and the growth planned for the immediate future by mills all over the nation are too large and too important to warrant the use of planning based on potentially unreliable information regarding long-term raw material requirements.

Combination of Methods Gives Answer

A combination of airphotos, field work and modern statistical methods can provide the necessary planning information at lower costs than those of the United

States Forest Service in its surveys of the several states. Utilizing this approach some aerial survey companies have provided the following: complete airphoto coverage of the working area; forest type maps; estimate of the pulpwood volume by forest type and species within a type; reliability of the overall results within specified limits of error as computed by modern statistical methods; and estimates of growth, drain and other planning requirements of an individual company. With such information a paper company can plan an expansion program based on a sound estimate of the future supply of the major raw material.

Utilization of Information

From a broad inventory of company timberlands foresters can calculate the maximum allowable annual cut in cords based on percent logging practices and can estimate the increase in production of the timberlands with more intensive forest management. The term "forest management" is used in the technical sense as employed by foresters to mean the manipulation of the forest to increase quality and quantity of growth, and not in the restricted sense of road and camp improvement.

Company personnel responsible for a steady flow of wood to the mill are confronted with the fact that the number of cords cut on company land is in many cases insufficient to fulfill the annual requirements of the mill. Such problems are acute today and will become more complex with the expansion of existing mills and because of the establishment of new mills in areas which are already being utilized to some extent by existing mills. Reliable evaluation of the wood potential in areas within an economical reach of a mill should tend to reduce the problems of wood procurement to manageable proportions.

Heretofore company planners have had only a very vague concept of the amount of potentially operable woodlots within a working radius. Data developed by this modern approach indicate the total acreage of operable areas, acreage of cut-over lands which are satisfactorily stocked with second-growth stands and which will be operable within a few decades, and the heavily cut areas which will not be available for a good many years. From such data a company forester can quickly delineate potentially operable stands that contain the volume of wood required in the general area in which a particular contractor wishes to work. By combining airphoto interpretation and field work, the forester can determine the suitability of the area as a "cutting chance." In addition, he can assist the operator in planning an efficient job layout, including camp and road locations, water supply data, and location of road building materials.

Having established the suitability of an area the company forester can then make arrangements with the owners of the woodlot for the purchase of the stumpage, that is the price per cord of wood removed from the property. Such planning can be done months in advance to insure the availability of working areas for the contractors and to assure a constant flow of wood to the mill. In addition, the problem of securing and holding an adequate labor force is minimized if the woodsmen are assured uninterrupted year-round employment.

Tree Farm Agreements

Of equal importance in a long range wood procurement program is the use of such information to establish close relationships with owners of woodlots. Such a relationship could result in a Tree Farm-family agreement under which the company and the woodlot owner would enjoy long term, mutually satisfactory benefits. A woodlot owner would agree to practice forestry and the paper company would agree to purchase the pulpwood and assist in the sale of other forest products. Some paper companies employ foresters whose primary responsibility is to consummate such agreements and to provide technical information to the timberland owner.

Such agreements should result in the stabilization of the flow of wood to the mill. They should increase wood production by improved forest management. They should improve the lot of the cutter, hauler and contractor by providing employment on a year-round basis, thereby reducing the great fluctuation in the supply of labor and in the available number of contractors. Tree Farm-family agreements should provide a continuous flow of wood throughout the year thereby reducing the large inventory of pulpwood many mills are forced to maintain because of the unreliability of present wood procurement methods.

Admittedly the maintenance of company-owner liaison programs will incur some expense, but the paper company is spared the expense of capital investment in the purchase of additional wildland property. Furthermore, in this ever increasing race for wood, only long term company-owner agreements can assure the availability of the major raw material for future operations and expansion.

Summary and Conclusions

The present size and predicted expansion of the pulp and paper industry indicates the need for more precise estimates of the availability and potential supply of wood for each mill. A host of existing methods provide estimates that may have large potential errors. In view of the magnitude of capital investments that exist and are proposed, more precise evaluation of timberlands within an economic radius of each mill can and should be obtained by combining airphotos, field work and modern statistical methods. Reliable evaluation of vast timberland areas can provide the means for long-range wood procurement planning that may involve liaison between woodlot owners, contractors and the paper companies that will result in a continuous flow of wood to the mill.

Let's Put Lubrication In a New Perspective

Another in our extensive series of articles on maintenance. These articles are all written specially for this series by authors with particular qualifications or experience on each subject.

T. M. Medzwiecki

When asked about lubrication in his mill, the chief engineer of a certain company replied: "why should we worry about lubrication in our mill, the oil companies do that for us." The chief engineer's attitude is of course, illogical. The co-operation of lubricant suppliers generally, is very good. Many suppliers do research work for the benefit of industry. Their duty is to supply and/or design lubricants to meet specific conditions. But the supply of lubricants is an external function. The internal function of application, etc., in any mill, is the responsibility of that mill. This is where, it is believed, the impact of reality is lacking in industry, to such an extent that progress in this direction is hardly perceptible. More initiative is desirable.

In what follows, an attempt is made to bring the "Lubrication" into proper perspective and focus with its environment. Only some of the broad aspects of the "Lubrication" will be discussed.

General

Goods are manufactured for the purpose of making a profit. In the haste of meeting production commitments many avenues of easy money making are often overlooked, one of these being lubrication.

Profit realized from the foregoing can have far greater consequences than for instance, a similar profit from papermaking; at any rate the former is just as good as the latter and under certain circumstances, probably better.

When confronted with a problem, there are two things one can do: handle the problem or solve the problem.

For greater mill efficiency, it is desirable to solve problems. This can be achieved only by sound management and good supervision of the three basic phases in the lubrication job i.e. Aspects vs Machinery vs Works (see Figure 1).

Let us take a closer look at the lubrication job. In Figure 1, if you leave out any elemental cube you have a void—a job is not being done? Take the opposite point of view—compare the elemental cubes with your set-up. You might be surprised to find duplication of effort i.e. different people responsible for the same elemental cube! Such collision of authority leads to confusion, neglect, buck passing, etc. Therefore, there is a need to examine the lubrication job on a broad basis.

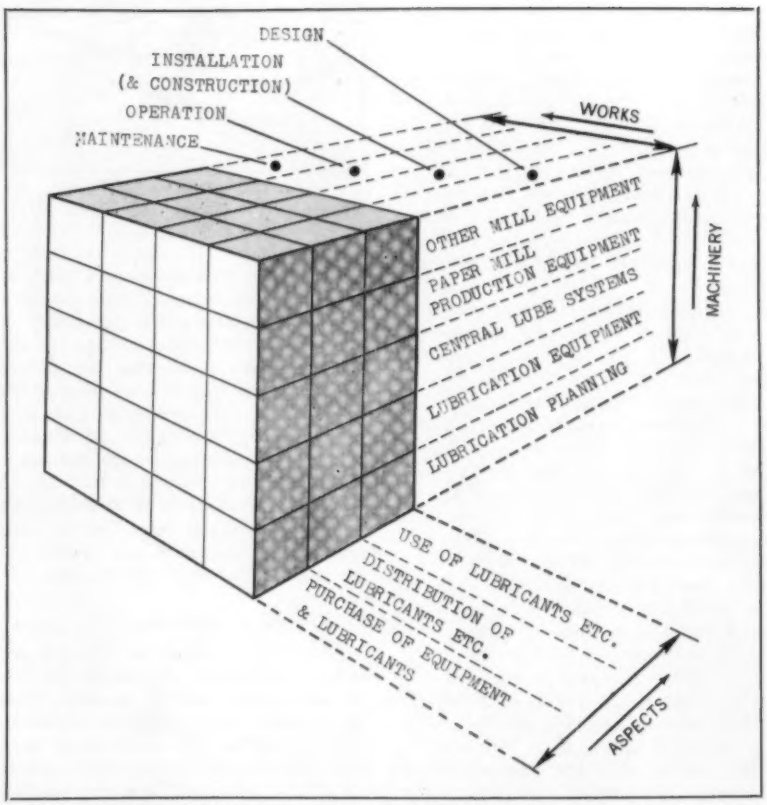


FIGURE 1—ALL SEGMENTS OF LUBRICATION JOB represented by three dimensional cube.

As can be apparent from the three dimensional cube (see Figure 1), there must be a realization that many people are or should be connected somehow or another with the lubrication job. An effective lubrication job means properly controlled wear and depreciation of production equipment which represents a considerable investment. Continued uninterrupted production from the point of view of the foregoing is desired, and its fruition will only be apparent when the proper dimensional perspective of the job is appreciated.

The field of lubrication is by no means static. To be competitive and keep pace with the outside world, clear thinking and action is desired all along the line. Otherwise, how could management take proper action if it is misinformed. For these reasons the lubrication job is

worthy of attention, at least commensurate with its position in production. In actual fact this is not the case.

Let us take a quick review of the make-up or machinery of the lubrication job (see Figure 1).

Lubrication Planning

Who should be charged with the business of lubrication planning? To get anywhere, it should embrace design, installation, operation, and maintenance. In other words, it should begin with engineering and end with "anti-breakdown" maintenance.

Lubrication Equipment

These are the instruments or the tools for the job of lubrication. Unless the proper equipment is available and in good working order, a man cannot do his job effectively. In spite of the foregoing, very little is known or appreciated about the design, construction, operation, and maintenance of these very specialized tools. New and better money saving equipment is continually being introduced by various manufacturers. Engineering know-how on the foregoing, together with an eye to superior methods, materials, etc., is a necessity if these improvements are to be kept up.

Central Lube Systems

This phase of mass lubrication has been neglected even though it has so much to offer in the field of better human relations, continuous production, control, economics, safety, etc. Here is a profitable field in which many companies can spend money and realize quick returns. There are many systems on the market, some are much better than others.

The foregoing is to no avail unless the lubrication job is in proper focus with its environment i.e., no voids exist, etc. The lubrication job from the point of view of design and installation, etc., is not appreciated. Engineering has its share of responsibility in this phase of activity. It is here that much of the job should be initiated, which is proof enough for the need of technical know-how.

According to Figure 1, *design*, *installation*, etc., account for 30 elemental cubes, or *Aspects* (3) x *Machinery* (5) x *Works* (2) = 30 units. This represents a 50 per cent share of the responsibility in the lubrication job! What is the situation in your mill? The lack of appreciation of this phase of activity in any industry can well mean the existence of a very expensive weakness. Some study is recommended here.

Paper Mill Production Equipment

The backbone of any paper mill is the paper machines. The production these turn out is the index of a mill's income. Expensive downtime on this equipment is unredeemable and costly—everyone knows this. In spite of this, antiquated methods are still being employed in looking after this equipment. Problems of recurring trouble and expense are being handled instead of being solved!

Engineering know-how is required to guarantee smoother and improved performance of these machines. This same kind of know-how should permeate all matters, even cost distribution. This should prove to be a great help in making decisions for expenditures in the right places such as the lubrication job, etc.

Other Mill Equipment

Production equipment outside the paper mill, forms the bulk of all mill equipment. The tendency here is to neglect such equipment in relation to the paper machines, etc. A false sense of security can easily be developed because downtime here is generally not serious. Nevertheless, to avert a serious production handicap, equipment maintenance outside the paper machine rooms is worthy of more consideration from all points of view including lubrication.

How Lubricants Serve Industry

Lubricants serve to control frictional forces by absorbing most of the punishment and wear of these forces. The biggest single factor which governs a lubricant's capacity to function as described, is associated with its viscosity or body under operating conditions. However there are other important properties due to the diversity of adverse conditions prevalent in our mills. For this and other reasons, lubricants are classed as (to mention a few): pure lubricants, lubricants with compounding, lubricants with rust and oxidation inhibitors, lubricants with additives, lubricants with detergents, lubricants with low pour points, lubricants with high flash or fire points, lubricants with high di-electric strength, etc., etc.

The improvement of the character of a lubricant by petro-chemistry is not a very old science and rapid strides are being made in it today. Synthetic lubricants so far have very specialized applications but they too are already showing great promise in the industrial field. People in key positions must appreciate these developments if the lubrication job is to be successful and profitable.

Role of the Oiler or Lubrication Mechanic

According to Figure 1, oilers are basically concerned with the following dimensions:—

a) Aspects = Use of lubricants.
b) Machinery = Lubrication Equipment.
Central Lube Systems.
Paper Mill Production Equipment.
Other Mill Equipment.
c) Works = Operation.

By definition, the lubrication job is composed of sixty (60) elemental cubes or units having the dimensions: Aspects x Machinery x Works. Therefore according to Figure 1, the job of a lubrication mechanic represents: *Aspects* (1) x *Machinery* (4) x *Works* (1) which equals four cubic units out of the total of 60 cubic units, a mere seven per cent (7 per cent) of the lubrication job. It follows that the remaining 93 per cent must be effectively organized to support seven per cent. Is this 93 per cent the weakness in many organizations—if so, why?

In Figure 1, each cube represents an assignable job—assignable by management. If these cubes (assignable jobs) are not permanently assigned or even appreciated, you will have as previously pointed out, voids and collisions of authority—an unsatisfactory situation.

There are many possible combinations to the structural pattern of the various cubes or assignable jobs. The actual arrangement of these jobs is the sole responsibility of management and should be tailored to suit conditions at each mill.

Internal and External Situation

The foregoing paragraph deals mainly with the internal situation in a mill. Any delegation of responsibility by management should incorporate external aspects such as:

- Lubricant job technical know-how, etc., from lubricant manufacturers.
- Lubricant job technical know-how, etc., from equipment manufacturers.
- Lubricant job technical know-how, etc., from publications.
- Lubricant job technical know-how, etc., from other mills and industries.

Summary

An effective lubrication job is essential, dependable and economic. Efforts in this direction will prove profitable in many ways.

Here are a few ideas:

1—There is a great need for high level policy making and wider acceptance of interest from the point of view of the lubrication job.

2—All voids in any setup must be permanently filled.

3—This must be followed up with the proper delegation of authority.

4—Correct action and control requires concise and accurate reports.

5—Cost accounting might need overhauling.

6—Proper internal and external communication of ideas is essential.

The Future of Groundwood Manufacture

Recent production advances and the outlook for future technical developments in mechanical pulp production are presented.

Representing the viewpoints of a production man, a machinery builder, a technical control man, and a research man, four experts recently gave forth their knowledge of what groundwood manufacture has come to and especially where it seems to be going. This symposium of experienced opinion was attended by nearly 150 TAPPI members and guests on April 19 in Glens Falls, N.Y.

The meeting was organized and presented by the Eastern Division, Empire State Section of TAPPI, the division chairman of which is Dr. Earl Johnson, research chemist with Stevens & Thompson Paper Co., Greenwich, N.Y. Three of the papers were presented at an afternoon technical session. The fourth speech was an instructive and at the same time entertaining after dinner performance by Dr. Wilfred Gallay.

Two papers described the most up-to-date procedures for grinding and bleaching groundwood. Donald A. Hunter, production manager, Moulded Pulp-Foodtainer Div., Diamond Match Co., Plattsburgh, N.Y., discussed "Present Methods of Making Groundwood", and Howard J. Cronin, International Paper Co., spoke on "Groundwood Bleaching."

Grinding

Mr. Hunter aimed his talk mainly at the latest methods for controlling such grinding variables as types of stone surface and patterns, stone speed, grinding pressure and temperature. He explained how, with limited success, he had attempted to control with hydraulic cylinders, the across-the-face speed and pressure of the burring operation. Grinder operation at Plattsburg has been improved with the addition of a Foxboro Stabilog control system. Mr. Hunter reports that the grinders are currently operating at 90 per cent of full load because of the efficiency of the control system. Another equipment advance at the Plattsburg mill was the recent installation of a new Kalle consistency regulator. Before this new Swedish regulator came, pulp consistency ranged rather freely between 1.8 and 2.5 per cent. Now consistency is held down closely to a desired 1.5 per cent.

TWO OF THE EXPERTS — Donald Hunter (Left) of Diamond Match Co. describes present groundwood pulping methods at his firm's Plattsburgh, N.Y. mill. Lee Eberhardt of Bauer Bros. explains what the Bauer system of groundwood manufacture from chips is accomplishing.

Assisting Mr. Hunter in explaining the construction and operation of the new Stabilog instrument and the Kalle regulator, was Norman Rauscher, chief chemist at Diamond Match's Plattsburg mill.

Bleaching

Mr. Cronin, in his bleaching paper, discussed the various methods and agents, such as hypochlorite, peroxide, and hydrosulphite, presently in use. Tracing the history of peroxide bleaching, he noted that in 1940 sodium peroxide bleaching of groundwood was first undertaken at the Norfolk, N.Y. of St. Regis Paper Co. and a brightness of 70 was achieved. High density bleaching was undertaken after the war at such places as Blandin Paper Co., Grand Rapids, Mich. and the Biron mill of Consolidated Water Power & Paper Co.

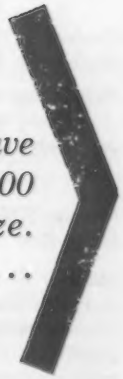
Successful bleaching of hardwood groundwood at high density requires careful control, Mr. Cronin observed. Temperature rise must be held to within 140 to 150 degrees F., and sequestering agents are necessary additives. He feels more efficient bleaching can be obtained at

(Continued on page 57)

SYMPOSIUM HEADLINERS—(l to r) Howard Cronin (International Paper Co.) spoke on groundwood bleaching, William Willets (Titanium Pigment Corp.) chairman of Empire State Section, Earl Johnson (Stevens & Thompson Paper Co.) chairman of Eastern District, Dr. W. Gallay (E. B. Eddy Co.) dinner speaker on future of groundwood, Vincent Long (American Wood Board Co.) meeting committee head, Vance Edwards (consultant) distinguished TAPPI member.

How much paper would you have to sell to make $20,000 profit?

With Mersize, you can save $20,000 on every $100,000 you spend for rosin size. Look at these results.....



Here are the 5-year four typical mills that

As a result of adopting Mersize in 1951, this mill has saved $300,000.

Book Paper

Producing 250 tons per day, bleached sulphite-groundwood book papers.

Following are Mersize vs. rosin size costs per ton for different weights of paper at equal sizing.

Basis Wt.	*Mersize RM*	*Rosin Size*
70	*$1.01*	*$1.95*
60	*1.31*	*2.68*
51	*3.37*	*4.62*
50	*1.81*	*2.70*
45	*3.18*	*3.41*
45	*2.38*	*4.06*
41	*3.72*	*4.20*
40	*4.29*	*4.31*
Average Cost Per Ton	*$2.63*	*$3.49*

RESULTS: A saving of 86¢ per ton by using Mersize . . . a total saving of $300,000 in the last 5 years.

In addition to better sizing, this mill's savings have amounted to $180,000.

Bleached Kraft Cylinder Board

Producing 75 tons per day of bleached board for hot drink cups, frozen food containers, and butter cartons.

Here is just one of the reasons these savings are possible . . . typical mill trial results run in 1951 on hot drink cup board.

	No. of Reels	*% Size Solids*	*% Cut*	*Cost $/Ton*	*Average Cobb Test*
Mersize RM	*1003*	*1.30*	*42*	*3.72*	*357*
Rosin Size	*980*	*2.25*	. .	*5.13*	*382*

RESULT: $1.41 per ton saving in size costs, plus substantially improved sizing (evident in test data above). Similar results with all grades of paper have made possible a total of $180,000 saving since 1951, plus additional savings made possible by doubled production.

On an equal sizing basis, this mill has saved over $1,000,000.

Bleached Kraft Paper and Board

Producing 550 tons per day of cup paper, milk bottle board, other bleached kraft fourdrinier paper and boards.

Following are some of the results on a range of basis weights, showing why this mill adopted Mersize.

Grade	*Basis Weight*	*% Reduction in Size Solids with Mersize Compared to Rosin Size for Equal Sizing*
Cup	*55*	*46%*
Cup	*67*	*58%*
Cup	*105*	*45%*
Cup	*110*	*60%*
Cup	*115*	*53%*
Cup	*121*	*49%*
Cup	*124*	*48%*
Cup	*133*	*50%*
Bleached Board	*220*	*44%*
Bleached Board	*228*	*52%*

RESULT: This 50% over-all average reduction in size solids means a dollar saving of over 30%. This amounts to $200,000 annually, or $1,000,000 in the past 5 years, on an equal sizing basis.

savings realized by adopted Mersize in 1951

Here's a mill that has saved $525,000 from 1951 to 1956 after trials showed Mersize saved $1.16 per ton compared to rosin size at equal sizing.

Bleached sulfite bond, mimeo, ledger papers

Producing 500 tons per day. Over an extended period involving the use of 30 tank cars of both products, this mill found Mersize allowed a 50% reduction in size requirements.

	Lbs. per Ton for Equal Sizing	*Saving of Mersize over Rosin*
Mersize	*18*	*$1.16 per ton*
Rosin Size	*35*	

RESULTS: By replacing rosin with Mersize this mill saves $1.16 per ton, estimates its savings in the past five years at $525,000.

Since 1941 . . . Monsanto Research has worked steadily to provide papermakers with the most dependable, controllable sizing at lower cost . . .

In 1943 . . . the first commercial quantities of Mersize, a rosin size additive that cut by one-half the amount of total size solids needed.

In 1947 . . . Mersize CD-2, an improved product for easier dispersing, increased solubility.

In 1948 . . . a *dry* Mersize CD-2 produced in solid form for easier handling.

In 1949 . . . Mersize RM, the first complete fortified size.

In 1952 . . . Mersize RM produced with low air stabilization properties for less troublesome machine operation.

1950-1955 . . . Additional Mersize production and distribution facilities established at Appleton, Wisconsin; Kalamazoo, Michigan; Baxley, Georgia; Fieldsboro, New Jersey; Cincinnati, Ohio; Seattle, Washington; Montreal, Quebec—for quick shipment.

. . . and the country's leading paper mills have profited because . . . . . .

Out of every ten mills that have given Mersize a thorough mill trial, nine have become steady users.

Papermakers, dependent on uniform sizing, say:

"With Mersize, the variations disappear—and the sizing level is much easier to maintain."

"Now—with Mersize, we have more uniform sizing."

From the size tank to the reel, Mersize RM requires no modification of mill practice or equipment change. If you would like to prove to yourself that Mersize can give you more uniform sizing at lower cost, write to:

MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, Paper Chemicals Dept. PC-1, St. Louis 1, Mo.

We'll arrange a mill trial at your convenience.

Mersize: Reg. U. S. Pat. Off.

MONSANTO

WHERE CREATIVE CHEMISTRY WORKS WONDERS FOR YOU

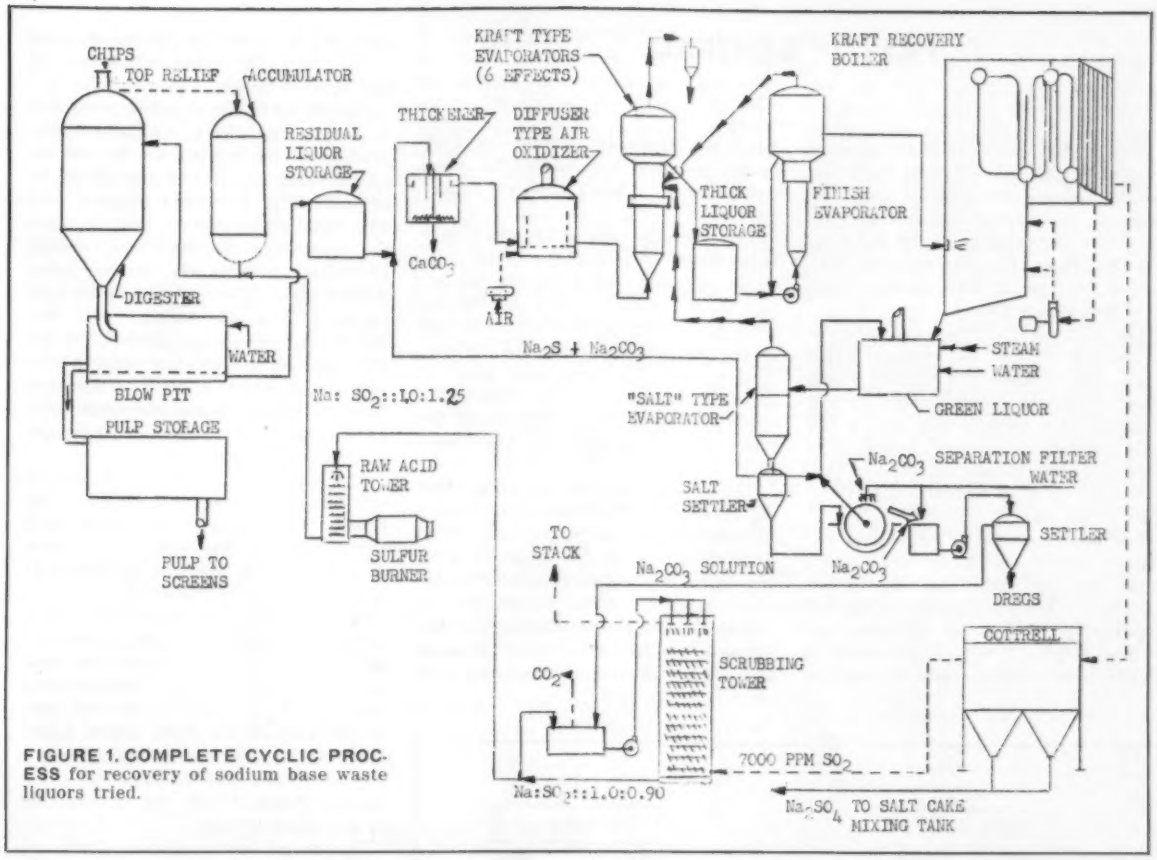


FIGURE 1. COMPLETE CYCLIC PROCESS for recovery of sodium base waste liquors tried.

How A Mill Size Sodium Base Pilot Recovery Plant Run Was Made

R. A. Nugent[1] and R. Q. Boyer[2]

The Nekoosa-Edwards Paper Co. and Western Precipitation Corp. in a joint effort dete mined the chemical results of burning a high sulphur content liquor in a full size recovery boiler. The test results showed that the maximum sulphur retained in the smelt will be combined with close to 50 percent of the smelt sodium. This furnacing information establishes a continuing cyclic operation. The cycle consists of chemically combining all the smelt sulphur with the incoming sodium base spent liquor and evaporating the product to make a high sulphur content firing liquor similar to that tested. The firing produces sodium carbonate and sulphur dioxide equivalent to the sodium and sulphur in the entering spent liquor. It, as well, gives equivalent sodium sulphide to that used in the liquor treatment.

This cyclic operation may be combined with an evaporation-crystallization method of separation from the smelt, the process requirements of pure sodium carbonate and with the use of this sodium carbonate in a stack scrubbing tower to recover the sulphur released as sulphur dioxide in the furnace. The combination of unit operations gives a self-contained recovery system for sodium base sulphite spent liquor. In effect the amount of sodium and of sulphur which enter the system in the spent liquor are combined as a sodium sulphite compound in the scrubbing tower and returned as cooking acid to complete the cycle.

Figure 1 shows the complete contemplated process including the evaporation and burning operations tested.

In addition to the experimentation an alternate method of smelt component separation was developed. Its purpose was to provide an inexpensive method of producing the needed chemicals from a kraft mill for long term test runs.

[1] R. A. Nugent was formerly manufacturing superintendent of the Nekoosa mill. He is presently in charge of Planning for the Nekoosa-Edwards Paper Co. He was in charge of the chemical engineering for this project.

[2] R. Q. Boyer is principal chemical engineer for Western Precipitation Corp. At the time of this project he had completed two years of extensive collaboration with Linn Bradley on sodium base recovery methods. He represented Western Precipitation Corp. for the project.

PART I GENERAL

The testing was a program planned between the Nekoosa-Edwards Paper Co. and the Western Precipitation Corp. The chemical engineering was a collaborative effort of engineers of the Nekoosa-Edwards Paper Co., the Swensen Division of the Whiting Corp. and the Western Precipitation Corp.

The pilot plant that was operated has an unusual feature. This feature is that it was put together with existing equipment: it utilized the full scale pulping facilities of a sulphite mill and a full scale operating recovery boiler of a kraft mill. The testing was done in such a manner, that no production was lost from either mill.

The process tested is unusual in one respect, that is, it utilizes only equipment and operations that are in use in either the kraft or sulphite pulp manufacture. The key to its successful operation depends upon converting a sodium base sulphite liquor to a liquor which is chemically similar to kraft liquors that are handled by the usual techniques of a kraft recovery department.

The two mills used in the experiment were the Port Edwards sulphite mill, which ordinarily was a 125 ton calcium base sulphite pulp mill and the Nekoosa kraft mill, which at that time was producing 200 tons of kraft pulp per day. The two mills are three miles apart — they are connected by the Nekoosa-Edwards Railroad, whose main traffic between the mills is pulp, fuel and chemicals.

The original plan was to utilize existing facilities at the Nekoosa mill for a full scale conversion of the liquor from a sulphite type to the required kraft type liquor. During the test, the Port Edwards mill was to be converted to a sodium base pulping operation. The thin liquor was to be hauled to the Nekoosa mill during the test in railroad tank cars, and the converted liquor evaporated in the kraft evaporators and burned in the recovery boiler.

The object of the experiment was not to demonstrate the adaptability of the process to the equipment, but to determine chemical data that could not be determined in any other manner. This important determination was in how the sulphur in the fired liquor would be divided between the furnace gases and the smelt. When a liquor of this type burns, part of the sulphur goes into the furnace gases as sulphur dioxide and part of the sulphur stays in the sodium ash which is finally discharged from the furnace as a molten smelt composed mainly of sodium sulphide and sodium carbonate.

The experience of Western Precipitation Corp. and other companies in operating pilot furnaces on sodium base liquors showed that they were useless in predicting the partition of sulphur in a modern recovery boiler.

A recent theoretical analysis based on the thermodynamics and kinetics of the chemical reaction, during the combustion, shows that the division is a function of the particle size and rate of charring of the fired liquor. These factors are space functions of a modern recovery boiler and are themselves unknown, therefore, are not duplicatable in the small furnace.

As can be seen in Figure 1, in view of the recycle of all the sodium sulphide, the controlling material balance factor is the ratio of sodium sulphide to sodium carbonate produced in the smelt. Too great a ratio would produce an inordinate inorganic load in the evaporators and complicate liquor treatment. Too small a ratio would not supply the sulphide sulphur necessary for the conversion reaction without giving an unreasonable sodium carbonate load to the evaporators. If the molar ratio of sodium sulphide in the smelt fell between two to one and one to two, the process can be operated. If the molar range was close to one to one, the process could be used not only for the acid sulphite liquor, but for all sodium base liquors, such as the liquors from the neutral sulphite semi-chemical process.

After it was decided to go ahead with the tests, a survey of the spare equipment owned by the mill showed that it was possible to use this equipment to construct a pilot plant for the liquor fixing and evaporation phases of the experiment.

The justification for erecting a pilot operation at the Port Edwards mill was that there was less danger of interrupting the kraft mill recovery production, beyond this, additional information could be gained on these phases.

Management, after weighing the fac-

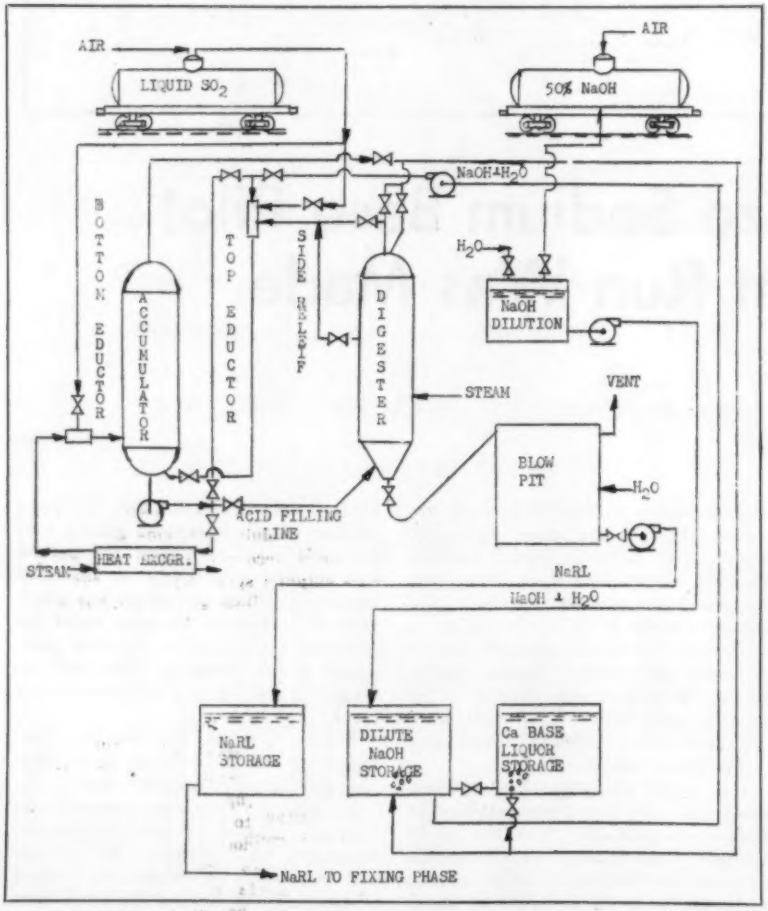


FIGURE 2. SODIUM BASE LIQUOR SET-UP for experimental production.

tors, provided for the necessary installation and for the loan of the spare equipment to construct a pilot plant capable of handling the liquor from 40 tons of pulp per day.

While the operation as finally carried out yielded a great deal more information, the pilot plant was never operated as a demonstration installation, but rather the conditions were varied, so as to yield the greatest amount of information. This fact should not be lost sight of in the description of the work.

From Figure 1, it is seen that the complete process involves five unit operations:

1—Liquor treatment.

2—Evaporation.

3—Burning.

4—Separation of pure sodium carbonate from the smelt.

5—Scrubbing the exit furnace gases with the sodium carbonate for the production of cooking acid.

The sulphur dioxide recovery from similar compositions of furnace gases have been so exhaustively studied by others, that it was not made part of this experimental program.

The sodium base spent sulphite liquor was prepared in 100,000 gallon batches. To do this, the mill had to be shifted over to sodium base for a series of cooks. The sodium base cooking acid was prepared directly in the accumulator for the first series of the cooks. The starting chemicals were sodium hydroxide and tank car sulphur dioxide. The setup is shown in Figure 2. The details of this operation were worked out with the help of the Ansul Chemical Co. engineers.

For later cooks, the cooking acid was made in mill equipment. One of the two Jensen towers was emptied of its limestone and the tower filled with 6" birch logs to form a sodium base tower. The sulphur dioxide for this operation was supplied by the mill's sulphur burner.

The sodium base liquor contained probably double the amount of calcium expected in an ordinary sodium base cook; this was due to the necessity of following in behind calcium base cooks with the sodium base acid; this, of course, dissolved some of the calcium scale with which a calcium base mill's system is coated. The excess of calcium in the liquor acted to emphasize any problem which might be expected from wood calcium in a regular sodium base installation.

PART II LIQUOR FIXING

Liquor Fixing Methods

To the people working with this fixing method, it has become known as the Bradley process. The process is to react here the sulphur from the smelt component separation with the sulphite sulphur available in the spent liquor. This process depends on the discovery by Bradley and Boyer that sulphur in the zero state oxidation either as collodial sulphur or from a polysulphide will react rapidly with the available tetravalent sulphur in the ligno-sulphonates to form thiosulphates and polythionates. The thiosulphates and polythionates are not corrosive and do not give off hydrogen sulphide in the evaporation step. However, the smelt sulphur available to the reaction is in the form of the non-reactive sulphide ion. The problem then is to take the sulphide ion up to the zero state by an oxidation-reduction reaction.

During experimentation, two methods were used to raise the sulphur to the zero state oxidation:

1—Under heat and pressure, a part of the tetravalent sulphur from the ligno-sulphonate can be made to react by oxidation—reduction with the sulphide sulphur in the mixture; this raises the sulphide sulphur to the necessary zero state.

2—Air can be passed into the mixed liquor at normal temperature; this raises the sulphide sulphur to the zero state by reaction with oxygen.

The air blowing method should not be confused by the reader with the Tomlinson or Bergstrom-Trobeck method of fixing kraft liquor with air. In the fixing of kraft liquor, the detrimental residual sulphide ion in the solution must be blown with sufficient air to carry the sulphide ion up to thiosulphate. In the kraft liquor oxidation process, there probably is no reaction of the sulphide sulphur with the organic compounds present. The lignins in kraft liquor are in the form of hydroxy or thio-lignins. Actually, chemically, the Bradley process is similar in objective to the Robeson process. In both of these processes, when operated properly, the sulphite ion is removed from the solution and the sulphonated aldehydes are the ligno-sulphonate are reacted to remove the sulphite sulphur from these compounds to the extent that they will not give off the corrosive sulphite ion during evaporation.

Theoretical considerations show that the chemical reaction employed in the Bradley process is capable of removing the sulphite ion in the solution down to the residual concentration of 2×10^{-7} mols per liter and that the equilibrium is not seriously changed by temperature. In the Robeson process which depends upon the low solubility of calcium sulphite to remove the sulphite, the same theoretical treatment shows that even with over liming, the residual sulphite concentration would be 3.8×10^{-4} mols per liter at 20° C and 5×10^{-7} mols per liter at 100° C.

Both processes are capable of desulphonating to approximately the same extent. The 40 years of successful operation of iron evaporators with the lignins from the Robeson process has established the effectiveness of removing the sulphite ion before evaporation. This is in contrast with the failures which have resulted from attempts to evaporate neutralized spent sulphite liquors in iron machines.

When the operation is run properly with the Bradley process, all of the corrosive sulphite ion is removed from the mixture and the volatile scale forming hydrogen sulphide has been suppressed by reacting the added sulphide ion in the mixture with the corrosive tetravalent sulphur.

Equipment

For pilot plant experimentation, three operations were originally to be provided. A fourth operation was found necessary. The four operations finally installed were:

1—A mixing station for mixing the spent liquor with the fixing solution in proper ratio.

2—A continuous pressure reactor.

3—An air oxidizer.

4—A settling system for calcium carbonate.

The fourth item was found necessary in order to operate the type of air oxidizer which was employed. The capacities of these operations were sized to provide for treatment of 50 g.p.m. of mixed liquor.

The plan was to mix the solutions in a pump. The spent sulphite liquor was brought up to the pump in a stainless steel line. An indicating orifice flow meter was installed in the spent sulphite line. The centrifugal pump was capable of developing 100 p.s.i. at a flow of 100 gallons per minute. A by-pass was piped around the mixing pump so considerable solution could be circulated in closed circuit with the pump. The sodium sulphide solution was brought up to the mixing pump in black iron pipe. A rotameter was installed in the sodium sulphide line for flow indication at the mixing pump. The sodium sulphide—sodium carbonate solution was introduced into the by-pass line.

The control indicator for mixing was

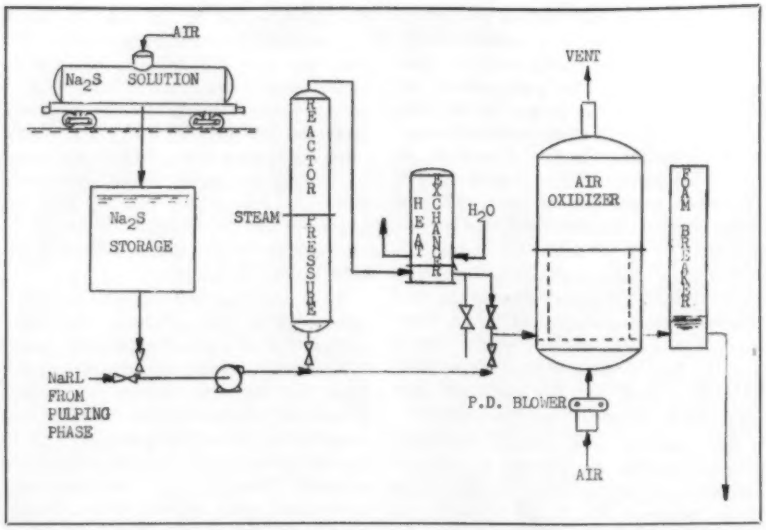


FIGURE 3. WASTE LIQUOR FIXING arrangement as operated at Nekoosa Edwards.

the pH of the mixed solutions. For each batch of fixing solution, a titration curve was constructed. The titration was made with known compositions of spent sulphite liquor and sodium sulphide—sodium carbonate mixture. The titration curve was plotted as a ratio of sulphur in the spent sulphite liquor to sulphur in the sulphide liquor vs. pH.

In the experiments where the pressure reactor was used, the pump developed sufficient pressure to operate the pressure reactor. The throttling was therefore done after the pressure reactor. In instances where the pressure reactor was not used, the throttling was done in the outlet line from the pump. The mixing operation worked in a satisfactory manner.

The pressure reactor was made by bolting together at their bottom flanges two shells from Morterud heaters. These Morterud heaters were used in the kraft industry for indirect heating of the digesters. They are of the bayonet type heat exchangers. The outside shell is a cast steel pressure jacket. The pressure reactor was vertically mounted and equipped with a steam sparger at the bottom for direct heating of the incoming liquor. The liquor from the outlet of the top of the pressure vessel was led through a Morterud heat exchanger that had been cannibalized from a spare kraft digester. There was sufficient heat exchange surface in this piece of equipment so that using mill water, the liquor temperature could be dropped from 300° F to 200° F. The throttle was placed at the outlet of the Morterud heat exchanger. The piping was arranged so that the liquor could be run to the air oxidizer for further treatment or bypassed directly to the evaporators.

The air oxidizer in its final form was an old kraft diffuser. This is a steel tank designed for 50 p.s.i. 22′ x 11′ dia. with punched plate false bottom. It was formerly widely used in the kraft industry for the washing of pulp. However, diffusers have been replaced in most U.S. kraft mills by rotary vacuum type washers.

After considerable experimentation with mounting porous carbon diffuser plates, a T bar grid was laid over the false bottom. This grid was a square constructed like a multiple window frame. Steel plate was used to fill in between the square grid and the tank wall. It was welded both to the tank wall and the edge of the grid.

A carbon diffuser plate was leaded into each frame. Rubber strips held down by 2x4's were placed across each lengthwise seam. These were used as an added precaution to hold the carbon plates in place. Above and across the 2x4's, two 6″ steel beams were welded to the tank wall. The 2x4's were held in place by wedges driven between the steel beams and the 2x4's. The edges of the diffuser plates were tightened in the frames by putting 3″ of water into the apparatus and peaning the lead at points where large bubbles showed when the air was turned on. The oxidizer on a water test showed only the desired minute bubbles. A 3′ high dam was welded across the tank at one edge of the square of the diffuser plates. The liquor was introduced into the tank formed by this dam. The overflow acted to distribute the liquor uniformly across the tank.

Another 3′ dam was welded across the opposite side at the edge of the diffuser plates—this prevented liquor that was not in the form of foam from flowing out of the apparatus. The outlet was a 12″ pipe that carried the foam into a stand pipe made of 55 gallon steel drum shells welded at the chimes. The stand pipe capacity was about 30 gallons per minute of clear liquor overflow.

The air was introduced under the carbon plates. A spare Roots Connerville blower was the source of the air supply. A by-pass to the atmosphere was tapped into the air supply. A pitot tube and a Mercury manometer were placed in the supply line to indicate the pressure and flow of air to the apparatus.

The measurements taken on the air source showed a 3 pound pressure drop with a flow of 250 C.F.M. through the 90 square feet of diffuser plate. When the air oxidizer was treating on a continuous basis, there was a flow of 40 gallons per minute. The liquid level gauge on the side of the air oxidizer showed an indicated level of between two and three feet. Actually, the height of the liquor which was apparently all in the form of foam in the oxidizer ranged from 16 to 20 feet during normal operation. The original installation is shown in Figure 3.

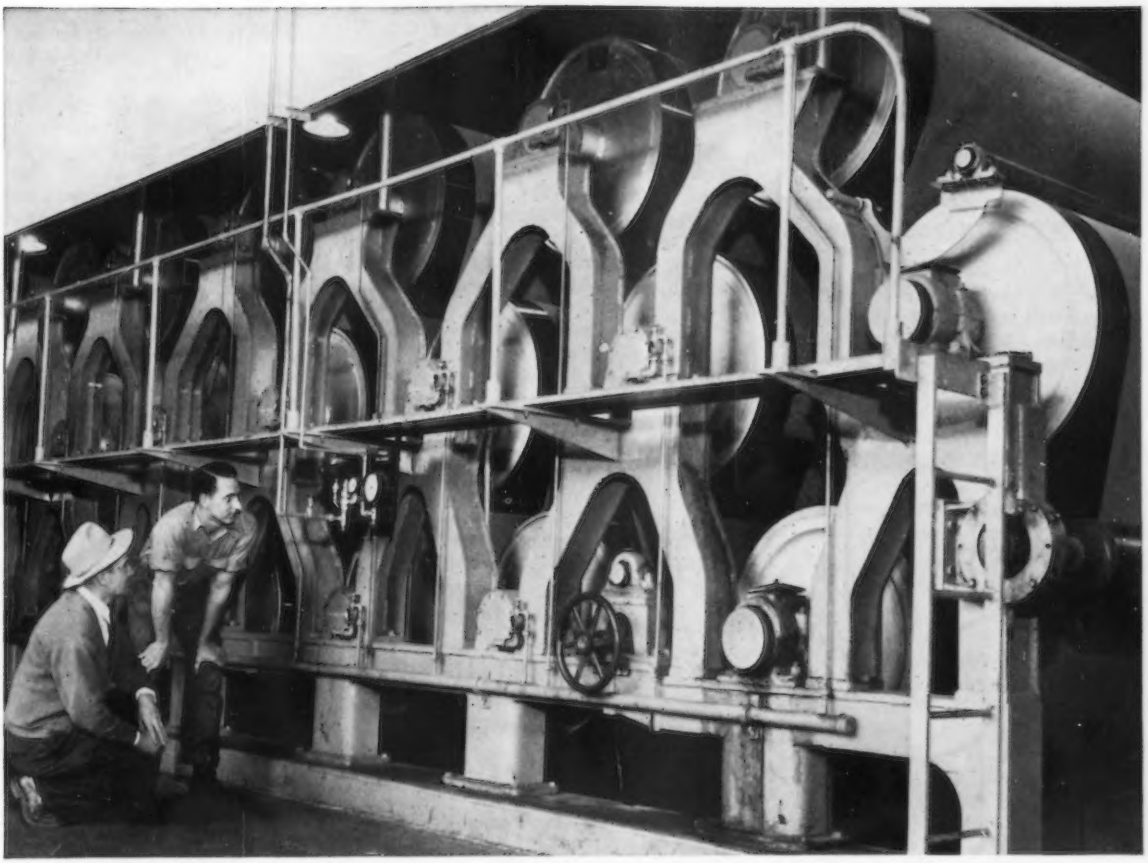
Effect of Calcium Carbonate

Laboratory and semi works tests with the porous carbon diffuser media had not shown any tendency for the diffuser to plug. Full scale operation very quickly revealed this problem. There were several ways in which the necessary oxidation could have been produced. The laboratory tests indicated that the porous diffuser method was superior in producing the desired result. It was therefore decided to attempt to solve the plugging problem rather than enter into a developmental program on foaming apparatus.

The calcium carbonate produced by adding the sodium carbonate bearing fixing solution had been purposely left suspended in the liquor in order to test its effect on the evaporator. Actually, the evaporator operation was expected to dictate whether or not it was necessary to remove the suspended calcium carbonate. However, it was thought that the calcium carbonate might be the culprit in the plugging of the diffuser plates.

To test this theory, a 17′ dia. steel tank, that was being used as the sodium sulphide—sodium carbonate storage tank was converted into a settler equipped with a peripheral mounted launder overflow and a center 3′ draft tube. The device simulated the settling characteristics of a Dorr thickener. The unreacted mixture was passed through the settler and the overflow led into the air oxidizer.

The overflow liquor clarified of its calcium carbonate burden operated in the air oxidizer in a very satisfactory



By adding 16 double shell driers to a 78 roll roofing felt machine, Johns-Manville's Waukegan, Illinois, plant has been able to operate that machine at higher pressures than before—with maximum safety and economy.

Pressure up...temperature up...and

PRODUCTION UP 15% AT JOHNS-MANVILLE USING LUKENWELD DRIER ROLLS!

■ The tough, welded steel construction of Lukenweld double shell drier rolls helped Johns-Manville boost roofing felt output by more than 15% in its Waukegan plant. Higher pressures and temperatures possible with these efficient rolls led the way. In fact, so efficient has been the performance of the rolls that *Johns-Manville ordered eight more for its plant in Asbestos, Quebec, and ten for its Pittsburg, California, plant.*

In addition to greater strength and built-in safety at high temperatures, Lukenweld drier rolls offer you better heat transfer . . . more uniform drying all along the face . . . safe operating pressures even over 200 psi . . . reduced start-up time . . . longer life.

There's no secret—it's the homogeneity and minimum thickness of steel plate plus the driers' all-welded construction and functional design that delivers these benefits. Installation costs are often lower. Maintenance is cut to the bone.

It will pay you to learn more about the many advantages of Lukenweld steel driers. Write, outlining your interests, to Lukenweld, Division of Lukens Steel Company, 853 Lukens Building, Coatesville, Pennsylvania.

LUKENWELD LUKENS

A DIVISION OF LUKENS STEEL COMPANY
COATESVILLE, PENNSYLVANIA

manner. The oxidizer diffuser plates would stay open for a week at a time, with no apparent deterioration of their effectiveness. Whether or not calcium carbonate would have interfered with the evaporator operation was never determined.

The flow sheet was altered to show the step of removing the calcium carbonate between the mixing pump and the air oxidizer. This step has the further function of eliminating what pulp accompanies the spent liquor. It was predicted by kraft mill personnel that the fiber left in the spent liquor would give trouble in the evaporators. In a completely cyclic process a settler also would act as a dregs washer, so that the benefits of its use appear to overweigh the complication of adding this unit operation.

Cleaning the Oxidizer Plates

The air oxidizer was washed out with fresh water until no foam could be observed, two to three inches of cold water were left on the plates, then sulphur dioxide and steam were admitted along with the air. The combination of steam and sulphur dioxide condensing in the plates quite rapidly rejuvenated the plates by solubilizing the plugging agents. A few spots that would not yield rapidly to the sulphur dioxide and steam treatment were cleared by pouring a solution of sodium hypochlorite on them. It is not thought that the above air oxidizer as it now stands is the only machine which could be used, but it is simply presented as an effective way of carrying out the desired reaction.

Experimental Procedure

The experimentation was divided into two burning runs. These runs were marked by the type of fixing solution supplied to the process. The two types of solution were:

1—A polysulphide solution purchased from an oil refinery. This inexpensive chemical was tempered with caustic to give it the proper ratio of sodium to sulphur. When diluted, this solution would yield a heavy suspension of colloidal sulphur.

2—A sodium sulphide—sodium carbonate solution made up partly of salvaged liquor from the smelt component separation on the previous burn, partly of kraft green liquor and the rest from purchased commercial sodium sulphide.

The main object was to determine the ratio of sodium carbonate to sodium sulphide, or as it is known in the kraft industry, the "sulphidity"; this may be defined as the percent of the total sodium that is present as sodium sulphide. It has now been established that the expected sulphidity could not have been determined, except by the use of full scale burning equipment. Having once established the expected sulphidity, a proper ratio could then be set for a test fixing solution.

The information from the polysulphide run gave a starting point for a properly ratioed experiment. The polysulphide run could give no information on the proper operation of the equipment for producing the required chemical reaction between sodium sulphide and spent liquor.

The polysulphide run did serve to train the testing crew and a great deal was learned about the mechanical operation of the apparatus. Various ratios of sodium to sulphur were produced in the treated liquor. This had the advantage that a range of compositions were fed in the first test to the furnace. The uniform composition of the smelt has led to the observation that the smelt composition within reason is not affected by the variation in sodium to sulphur of the firing liquor.

The quantitative reaction studies were made on the second run, using a conservative ratio of sodium sulphide to sodium carbonate. Within the first twenty-four hours of the second run, the calcium carbonate plugging of the oxidizer apparatus carbon diffuser plates was observed and the curative measures taken. With proper fixing, the effect of pH, on the evaporation stage could then be observed. Having established an operating system, the rest of this run was conducted without further incident. The small foam breaking capacity of the stand pipe was lived with, as it was possible to pump the somewhat foamy liquor into the evaporator.

In the laboratory work, the samples of liquor have been evaporated to test the completeness of reaction. In the full scale work, as will be explained under Evaporation, the evaporator condensates were used as the control for a satisfactory product from the liquor fixing step.

PART III EVAPORATION

The Swensen Evaporator Division of the Whiting Corp. assumed the responsibility for the evaporator engineering and design.

An economic process required that:

1—In evaporating up to 55 percent solids the treated liquor should have evaporation, scaling and corrosion characteristics similar to, or better than, those of oxidized kraft liquor.

2—The liquor should be capable of being further evaporated in a forced circulation concentrator to 65 percent solids.

3—The product from the forced circulation evaporation be capable of being pumped through the furnace sprays.

Equipment

The mill had four old 14′ tube LTV Swensen black liquor evaporators in the salvage yard, along with vapor piping and auxiliaries. Two were of the cone bottom type and two had bottoms of the dished head variety. The Swensen engineers elected to use the cone bottom evaporators as a two effect system to tak the liquor up to 55 percent solids.

One of the dished bottom bodies was scavenged of its bottom and vapor head. These two pieces were bolted together to form a vapor head for a forced circulation evaporator.

Following a design supplied from the Swenson Engineering Department, the mill shops constructed a heat exchanger having 437⁄8″-14′ tube bundle. It was specified that the velocity in these tubes would be maintained above 10′ per second. The heat exchanger was mounted vertically under the improvised vapor head. From the top tube sheet a cone necked the flow into a 3″ pipe. This 3″ pipe was run through the bottom flange of the vapor head up to within 2′ of the existing umbrella in the vapor head. A 6″ downcomer was welded into the side of the bottom of the vapor head. This downcomer was connected directly into the intake of a floor mounted cast iron circulation pump. The downcomer was fitted with an extension section. The outlet from the pump was connected through an extension section on to a cone fitted on the bottom of the vertical heat exchanger.

The forced circulation evaporator for smooth operation required that it carry a considerable load of liquor in the vapor head. This load acted as a reservoir or concentration surge against any rapid change experienced in the rest of the system. To control the liquid level of the evaporator, a "J" type overflow connected near the bottom of the vapor head was provided.

For experimental purposes, the liquor was evaporated through a large range of percent solids. At times, the solids ran as high as 80 percent. The only difficulty experienced with the machine was in the clogging of this "J" overflow at the point where it connected to the evaporator. It was found that this point could be kept free of solids by pumping some of the circulating liquor into the

Pitch Trouble?

Your Celite engineer can help you eliminate it from your stock—at no cost

IF EXCESSIVE PITCH has increased your down time, call in a Celite* engineer. He'll be glad to show you how Celite can lick this problem in your mill at virtually no cost to you.

By means of carefully supervised test runs, our engineer will demonstrate how the minute Celite particles absorb and coat the pitch before troublesome agglomerates form. He'll also show you how the cost is largely recovered through longer production runs and the retention of the Celite in the sheet. Such small quantities are required (generally 1% to 2%) that sheet quality is not altered to any noticeable degree nor does the Celite build up in the stock or white water system.

The Celite engineer is trained at the Johns-Manville research center where an actual miniature paper mill is in operation. You'll find him well qualified to assist you no matter what your particular conditions may be. And there is never a charge for his services. For further information, write Johns-Manville, Box 60, New York 16, N. Y. In Canada, Port Credit, Ontario.

*Celite is Johns-Manville's registered trade mark for its diatomaceous silica products. In the paper industry, it enjoys wide use in the control of pitch, to increase opacity and brightness and provide better ink receptivity and absorption.

Celite Properties of Value in Pitch Control

Average Particle size range	4 to 10 (microns)
Water absorption	155 to 200 (% by weight)
Porosity	65% to 85%
Reactivity	Inert

JOHNS-MANVILLE JM PRODUCTS

Johns-Manville CELITE

PRODUCTS FOR THE PAPER INDUSTRY

side arm so that the direction of flow was back into the evaporator. In order to do this, a 1" line was tapped from a point between the circulating pump and the heat exchanger and connected into the bottom of the "J" overflow.

The overflow pipe from the forced circulation evaporator dropped into a two stage pump capable of developing 150 p.s.i. This pumped the liquor through a 1" line approximately 150' into the steam coil equipped railroad tank cars. The line was not insulated. the high velocity in the 1" line was depended upon to keep the line clear. Steam was provided to clear the line in case of an emergency shutdown. This arrangement proved satisfactory. As an experiment, a 3" line was provided as a standby. It was found that it was impossible to keep this 3" line open or even steam it out on an emergency shutdown. The standby line demonstrated the value of employing high velocities when handling thick liquor.

Steam was delivered to the steam chest of the first effect of the Kraft type evaporators and to the heat exchanger of the forced circulation evaporator at 25 p.s.i. The steam was taken directly from the mill's 150 p.s.i. line through a pressure reducer.

Blowout patches set for 35 p.s.i were placed in the line between the steam chest and the reducing valve to protect the evaporator bodies. The steam flow to the forced circulation evaporator was measured with a Cadillac Condensate meter. The steam flow to the concentrator was in the range of 1250 pounds per hour. The steam flow to the first effect of the kraft type system was measured across an orifice with a Bailey steam flow meter, the consumption being about 10,000 pounds per hour.

The vapor heads of both the forced circulation evaporator and of the second effect kraft type evaporator were operated at atmospheric pressure. The vapors from both machines were released directly to the atmosphere without any attempt made to entrap them.

The liquor flow rate through the two effect evaporator was considerably lower than the machines were designed for. The Swensen engineers therefore provided for recirculation lines from outlet line of the vapor heads back to the evaporator pumps.

Recirculation in Test Evaporators

The use of recirculation raises both the volume and concentration of the liquor entering the effect. The increase in volume provides for a higher velocity in the tubes. The kraft type machine is of the climbing film variety. This device depends for its very efficient operation on the foam being propelled through the tubes by the steam generated during its excursion. With insufficient volume

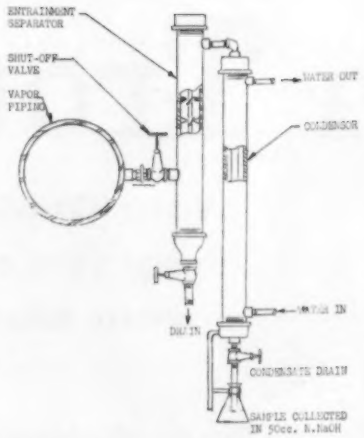


FIGURE 4. VAPOR SAMPLING DEVICE used in testing evaporator condensate.

and too thick a liquor entering the tube, the liquor will tend to go to dryness before reaching the top. This will cause a baking of the organics and an organic scale formation on the upper part of the tubes. With increased concentrations the great viscosity reduces the velocity and results in poor heat transfer even though baking does not occur.

When the situation starts only a few tubes will exhibit this effect, the rest will operate normally. Indeed, at the start and as a countering phenomena, the liquor from the tubes operating in a normal manner will flow down the tubes showing a smaller heat transfer coefficient, this causes an internal recirculation.

The proper volume of recirculation in the case of low feed rates permits all tubes to operate in a normal manner. On the other hand, too great an amount of recirculation floods the lower portion of the tubes so that the advantageous foaming of the climbing film evaporator cannot take place. This flooding of course again drops the coefficient of the machine. Therefore, in accordance with the described effects, as the recirculation is increased, the steam consumption to the evaporator goes through a maximum for a given percent solids discharge. In the operation, the recirculation had to be adjusted at the maximum for each change of feed condition.

The machines were, of course, on backward feed in accordance with standard kraft practice. The volume of the liquor into the first effect was sufficient so that it was not found necessary to use recirculation in this body. However, the first effect body was operated without great difficulty up to 60 percent solids but it required considerable recirculation. It was estimated that when the machine was operated at maximum heat transfer coefficients the circulation was approximately three to one.

Vapor Composition

One of the important points of the experimentation was to determine the acidity and composition of the condensates from the kraft type evaporator. Vapor sampling devices were tapped into vapor pipes from both the first and second effect evaporators. The design of this devices is shown in Figure 4.

A similar portable sampling device was constructed of glass. This was used to sample the vapors from the Nekoosa mill kraft evaporators. The kraft samples were taken so as to compare the probable corrosive action of the pilot plant vapors with those of kraft. It was felt that the experience with kraft evaporator life might be used if similar or better conditions could be maintained in the vapors from the fixed liquor.

The vapor sampling devices on the pilot plant also acted as the control for the liquor fixing system. The criteria that was adopted for liquor fixing was that 100 cc's of condensate taken up into sodium hydroxide would not titrate over 10 cc's of 1/10 normal iodine.

This is approximately 1/10 of the iodine consumption found by employing the glass apparatus on the operating first effect of the kraft evaporator.

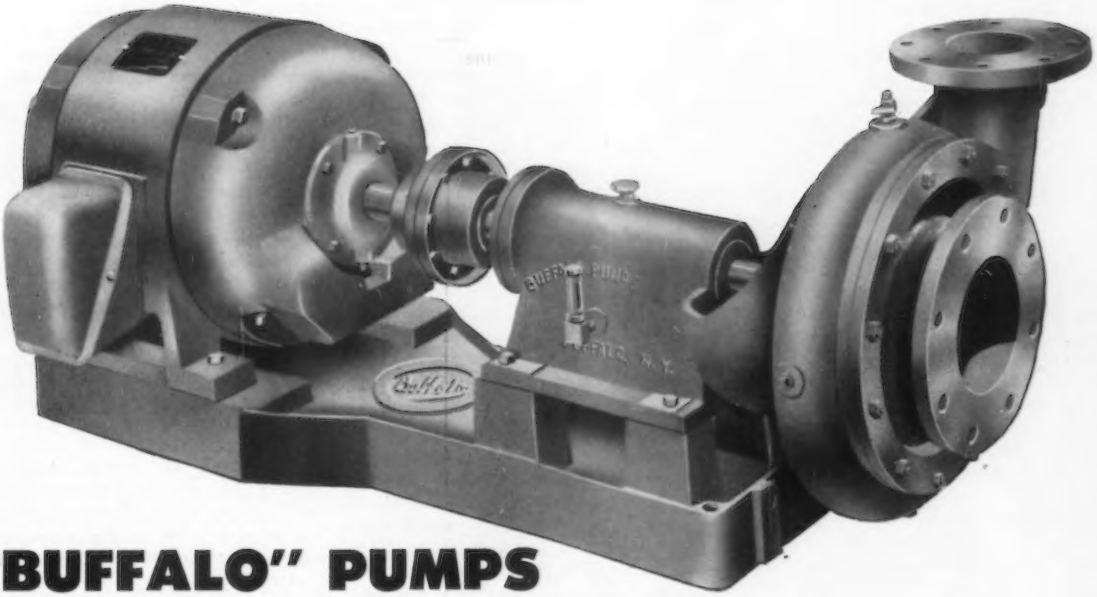
Corrosion

Laboratory corrosion tests are of no significance in fixed liquors of the type under study. These liquors contain some ligno-sulphonate unaltered. In the ordinary corrosion test, the test strip is immersed in a large volume of the liquor under study and held at the proper temperature for a long enough time to produce a significant weight loss in the test piece. Such a procedure is not significant if the liquor undergoes chemical change under prolonged standing and if the test is to be interpreted for a liquor in contact with an apparatus in which any given volume of the liquor is in the apparatus for a short time.

Such a situation is obtained with liquor from the Robeson process, the Howard process, the Bradley process and probably as well on the old Bradley-McKeefe process that is being operated at the Tomahawk mill of the National container Company. These processes destroy all appreciable sulphite ion in the solution; and as well, the easily disassociable ligno-sulphonate is stripped of its tetravalent sulphur. However, on a prolonged standing under alkaline conditions, the remaining ligno-sulphonate in these liquors supplies an appreciable quantity of the corrosive sulphite ion to the solution.

After extensive laboratory observations of this phenomena, it was decided by Western Precipitation Corp. that:

1—That any flow sheet specified would exclude storage between the liquor

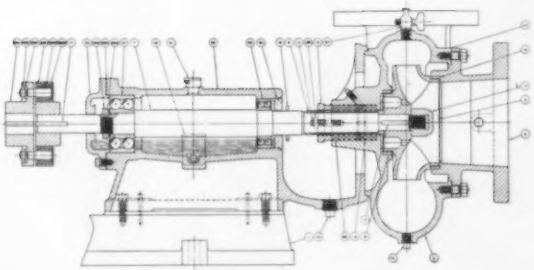


"BUFFALO" PUMPS

SPECIALIZED FOR THE PAPER INDUSTRY

For Handling Size, Clay Solution, Lime, Silicate of Soda—Efficiently

For circulation and agitation of chemical liquids in the paper mill, these "Buffalo" Single Suction Full Ball Bearing Centrifugal Pumps have thoroughly proved their durability and efficiency on the job. They are available in most alloys—with open impellers for handling viscous liquids or large solids —with the more efficient enclosed impellers for all other services. Like all "Buffalo" Paper Stock Pumps, they have oversize shafts, bearings and stuffing boxes—heavy-duty impellers, casings and stands to take severe, continuous service in your mill. Capacities to 1200 gpm. Write for Bulletin 953-J for details on these and other "Q" Factor* "Buffalo" Pumps for every stock job.



"Q" Factor construction* is indicated by this sectional drawing. Note extra large thrust ball bearings and large diameter shaft—ample oil reservoir—accessible stuffing box holding eight rings of packing—generous passages for liquids in casing. Inlet flange is easily removed for access to impeller.

**The "Q" Factor — the built-in Quality which provides trouble-free satisfaction and long life.*

"Buffalo" PUMPS

BUFFALO PUMPS

Division of Buffalo Forge Co.

159 MORTIMER ST. BUFFALO, N. Y.

Canada Pumps, Ltd., Kitchener, Ont.
Sales Representaives in all Principal Cities

A BETTER CENTRIFUGAL PUMP FOR EVERY LIQUID

fixing apparatus and the steel bodies evaporators.

2—Any corrosion test data that was significant would have to be determined under continuously operating conditions with freshly prepared fixed liquor.

Prior to the mill scale test, the technical department of Western Precipitation Corp. had constructed and operated a laboratory model evaporator for corrosion data. The vapor head, piping and steam chest of this evaporator were put together from sections of pyrex pipe. A single 1″ piece of Shelby steel tubing served both as the corrosion test piece and the heat exchange surface. The piece was chrome plated on the steam side so as to eliminate the air-in-steam corrosive factor. The piece was mounted in the evaporator in rubber ferrules which blinded the chrome plate steel junction and exposed only an iron surface to the boiling liquor. The tube was light enough that it could be demounted from the apparatus, cleaned, suspended from an analytical balance and the loss of weight observed.

The laboratory evaporator was operated during the work week on liquor prepared within the prior 24 hour period. This type of testing showed a tenfold decrease in corrosion rate over that exhibited by the batch test method. Analytical results on the thick liquor continuously discharged from the evaporator demonstrated that during the residence time that was expected from a full scale LTV, no sulphite ion could be detected in the solution in contrast with a significant amount of sulphite ion found in the liquor at the end of a batch corrosion test.

At Port Edwards in order to gain an idea of comparative corrosion rates between the liquor under plant operating conditions and that of kraft liquor, corrosion spools were obtained from the International Nickel Co. The International Nickel Co. supplies the service of weighing corrosion strips before and after exposure and reporting the corrosion results in inches per year.

A spool was mounted submerged in the thick liquor in the head of the forced circulation evaporator. Another spool was mounted on the manhole cover of the first effect vapor head. At this position, the sample was shielded by the umbrella away from any spray which might be entrained in the vapor. The third spool was mounted directly over the inlet to the cone of the second effect evaporator. This spool was to indicate the corrosive action of the thin liquor.

Unfortunately, due to the insufficient foam breaking capacity after the oxidizer during most of the operation of the system, the third spool was bathed in a foamy liquor. This spool's corrosion rate therefore was identical to that expected on a strip in air ladened water of the same pH and temperature. For this reason, the results obtained on this spool were not considered significant.

The use of foamy liquor interfered to some extent with the flow measurement to the evaporator; however, it did not effect the operation of the second effect evaporator.

The corrosion rate of any significance for thin liquor is that obtained by operating on a continuous basis under third effect conditions, the single tube corrosion test laboratory evaporator.

In the case of the other two spools, the corrosion rate obtained was used to compare with other available corrosion strip results on kraft liquor. Apparently no similar corrosion spool testing on kraft evaporators has been done in this country. None of the sources associated with these tests were able to supply corrision strip results for comparison. The only available kraft corrosion strip results were those obtained by a Swedish Committee and reported by Von Essen. The rates on the pilot plant spools compared favorably with those reported by Von Essen on test strips from kraft evaporators operated on air oxidized kraft liquor. They were lower than those obtained by Von Essen on regular kraft liquor.

Experimental Operation

The thin liquor was metered into the system through a Fisher and Porter Rotameter. The feed volume was approximately 40 gallons per minute of 12½ percent solids liquor. At best operating values, the system produced a thick liquor of 63 percent solids.

Liquor flow and condensate lines were provided with sampling spigots. Density measurements on the liquor showed that the Baumé charts employed in the kraft mill were sufficiently accurate to be used directly in the control of the evaporator system.

In the final analysis, it was the evaporators which dictated the conditions in the liquor fixing operation. The tests using the waste sulphur—poly sulphide solution without sodium carbonate present, showed that the main reaction, that of liquor fixing, could be satisfactorily conducted to produce a sulphite ion free solutioin of a pH of 8. However, without the presence of sodium carbonate, wood calcium in such a solution was still present as an ion. The calcium would contribute a small amount of soft scale on the tubes which was found to be mainly calcium sulphite.

Far more serious from an operational point of view and somewhat startling was non-scale forming gravel-like solid phase which appeared in the cone of the first effect LTV. This solid phase was identified later as consisting mainly of calcium ligno-sulphate. This compound may never have shown up at this point with full scale normal operation. The accumulation may have been the result of having to use the recirculation that was necessary for the pilot plant operation. Recirculation permitted the evaporator cone to act as a settling area.

The calcium disappeared as an evaporation problem when sodium carbonate was added before the liquor settled.

The required pH of the evaporator feed liquor was dictated by the solubility of organic sodium compounds. The 180° F solubility of these compounds was observed by noting the Baumé reading from the concentrator. After the liquor fixing system was revised so that properly fixed calcium-free liquors were being delivered to the evaporator, it was noted that no matter how much evaporation seemed to be taking place in the concentrator, the 180° F Baumé readings would not rise above a certain value for a given pH. The indicated solids were then considered the solubility. The solubilities at 180° F were determined in this manner to be as follows:

pH 9.6	48% solids
pH 10.0	55% solids
ph 10.7	66% solids

Similar relationship between solubility and pH have been noted in attempts to evaporate high yield (low pH) kraft black liquor and also semi-chemical spent liquors.

The appearance and examination of the various factors which might interfere with the evaporation step, were the result of an orderly experimentation. Proper experimentation for this pilot plant required that only one factor at a time be changed. This approach led to the final specification, that the liquor feed to the evaporator was to be calcium ion free and at a pH of 10.8 or above. The pilot operations indicated that this type of liquor, which could be produced, would operate in a manner similar to kraft liquor when used in a regular kraft evaporator.

Condensate Odor

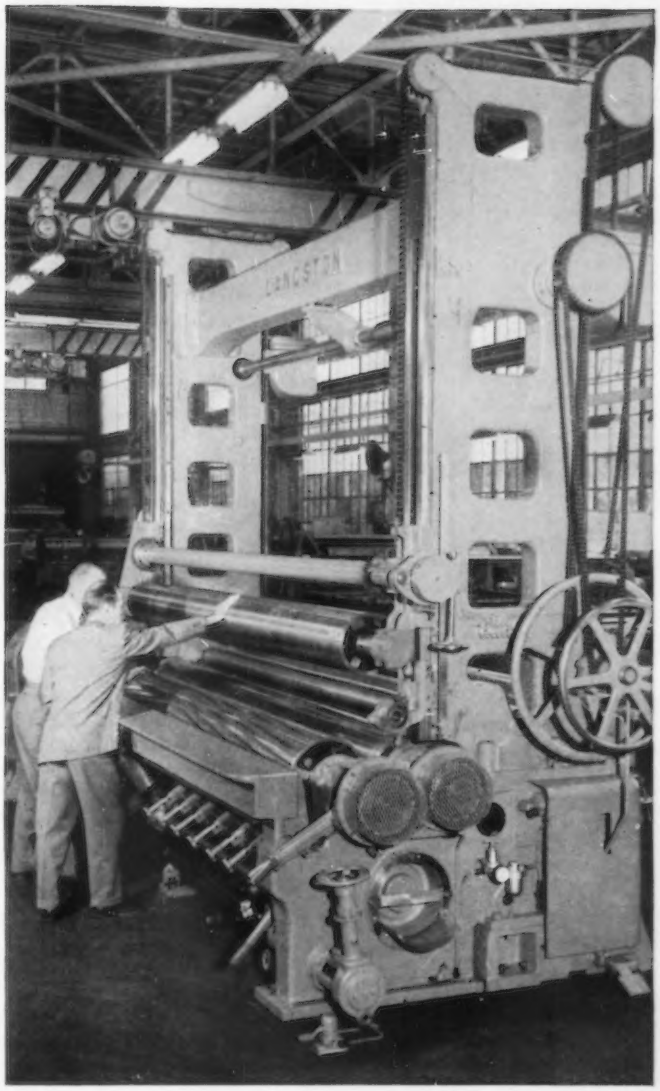
Difficulties which properly operated full scale equipment would eliminate were lived with in the pilot operation. One of the most vexing of these problems had to do with the discharge of evaporator vapors directly into the air. As has been mentioned above, in the first part of the experimentation, the liquor was at times not properly fixed. Therefore, the vapors from the evaporators bore some hydrogen sulphide. Far more bothersome, however, was the phase of the experimentation in which the unit process involving pressure reaction was used as the liquor fixing mechanism. As a side reaction, this operation produces

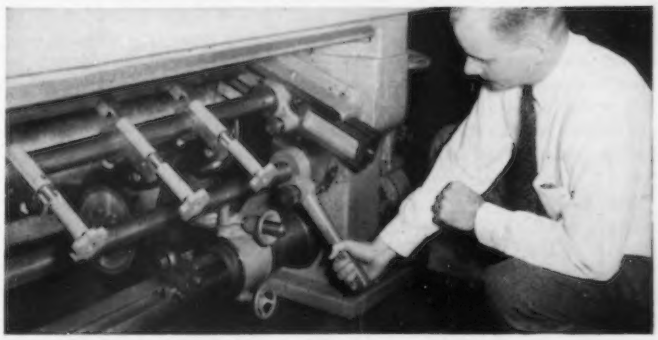
Model DA **Langston Slitter & Winder** has 2-way control of roll density

The rider roll on this high-speed Langston Slitter & Winder does more than merely provide pressure. Extra tensioning effect can be added simply by adjusting a friction clutch between the rider roll and the overspeed drive. This adjustment is variable according to the needs of the particular paper being wound.

Tensioning effected by the overspeed of the rear main drum is adjustable by varying the pitch of the sheaves on the drive side of the machine. This adjustment provides simultaneous control over the speed of the drive to the rider roll. Tension can be further controlled within close limits by any of a variety of different braking systems on the unwind stand.

Langston Slitters & Winders feature the famous shear-cut slitters as standard equipment on all machines. Sturdy bedplate and side frames assure stability at all speeds. Optional features include hydraulic roll ejector, roll drop, and hydraulic roll actuator. Sizes to 196 inches wide and speeds to meet your requirements. Write for information. SAMUEL M. LANGSTON CO., CAMDEN 4, N.J.





Reverse winding is optional and available on all Langston Slitters & Winders, Models B, C and D. Photo shows man raising lever to set spreader bar on Model DA machine for reverse winding.

LANGSTON *Leadership...by design*

SHEAR CUT CLEAN CUT

the nauseating mercaptans typical of kraft liquor.

The air oxidizer itself had a slight woody vanalin scented odor during proper operation of fixing by air oxidization alone. Liquor from this unit process gave condensates in the evaporator that were not nauseating. This is in contrast to the kraft evaporator condensates which were collected and passed around to the staff for comparison in order to convince them that they were not working with an obnoxious material.

Polymerization of Stored Thick Liquor

A lesson was learned from the geographical separation of burning and evaporation steps in the pilot plant. This was in the matter of hot storage of the thick liquor. The difficulty hindered further experimentation with equipment in use at Port Edwards. Laboratory experience and later mill experience showed that liquor concentrated to 65 percent or better could be stored in the cold, but such storage leaves the liquor as an unhandleable tarry syrup. Steam heated railroad tank cars and spare digesters were used to store the liquor prior to the burning experiments. On prolonged standing the liquors apparently polymerized, the solid phase was alkali soluble; however, an addition of the proper amount of alkali to solubilize this material would have upset the liquor sodium to sulphur ratio which was the important factor to be studied in the burning runs.

In the final evaporation work, it was found that no precipitation would take place over a period of at least a month if the hot storage of the liquor was at no more than 45 percent solids.

Liquor stored at 45 percent for a long period could still be evaporated, just prior to burning, up to the desired 65 percent solid and could be handled by the equipment used in the burning test. Continued experimentation therefore, would have required under the geographical set-up, the installation of a full scale forced circulation evaporator at Nekoosa to take the 45 percent transported liquor up to burning concentration.

The flow sheet was changed because of these difficulties so that the necessary storage of thick liquor for the furnace is placed between the LTV and the forced circulation concentrator. This arrangement is not as unusual as it might appear to be, as it may be noted that the concentrator replaces the cascade evaporator in the normal kraft sequence of evaporation. A parallel condition exists for the thick liquor storage in the kraft circuit is between the first effect LTV and the cascade.

It has been demonstrated, that pilot evaporation test runs with the liquor could be made with a kraft mill if the full scale LTV's are at the side of the furnace, for this work showed that the liquor can be burned at 55 percent which can be produced directly from kraft type machines alone.

PART IV BURNING

The mechanical problem to be solved with the burning tests were related to utilizing the furnace of an operating kraft mill. The furnace operating at over design ordinarily was shut down once a month for inspection and cleaning. A regular shutdown period would have to be utilized. The burning test would have to follow directly upon the kraft liquor shut-off, so that the valuable test liquor would not have to be wasted in bringing the boiler up to pressure. The cascade evaporator would have to be by-passed as a direct contact evaporator, as the sulphur dioxide laden flue gases from burning this type of liquor would tend to precipitate the lignin.

From the testing viewpoint, the factors to be determined were:

1—The sulphidity of the smelt.

2—The concentration of sulphur dioxide and the amount of particulate (solids) matter in the flue gases.

3—All of the usual boiler operating data.

The general plan was to empty the kraft thick liquor storage during the week before, by increasing the rate of burning of the kraft liquor. This would permit the kraft evaporators to run during the burning test; the thick liquor from the evaporators being discharged into the available storage. Two spare kraft digesters were used for storage of some of the experimental liquor. By bridging through the plant's white and green liquor system, these two digesters were connected directly into the outlet of the cascade evaporator, which is connected to the furnace spray pumps. As the main supply of liquor had been stored in the railroad tank cars, the function of the spare kraft digesters became that of surge tanks, the railroad cars being emptied into the digesters during the burning runs.

The pumping of the liquor over to the furnace and the actual burning was carried on without incident in both tests. The difficulties which were experienced had to do with the prolonged storage of the liquor made necessary by the scheduling of the furnace and the interruptions that were necessary in the pilot installation at Port Edwards in order to correct the difficulties as they became apparent.

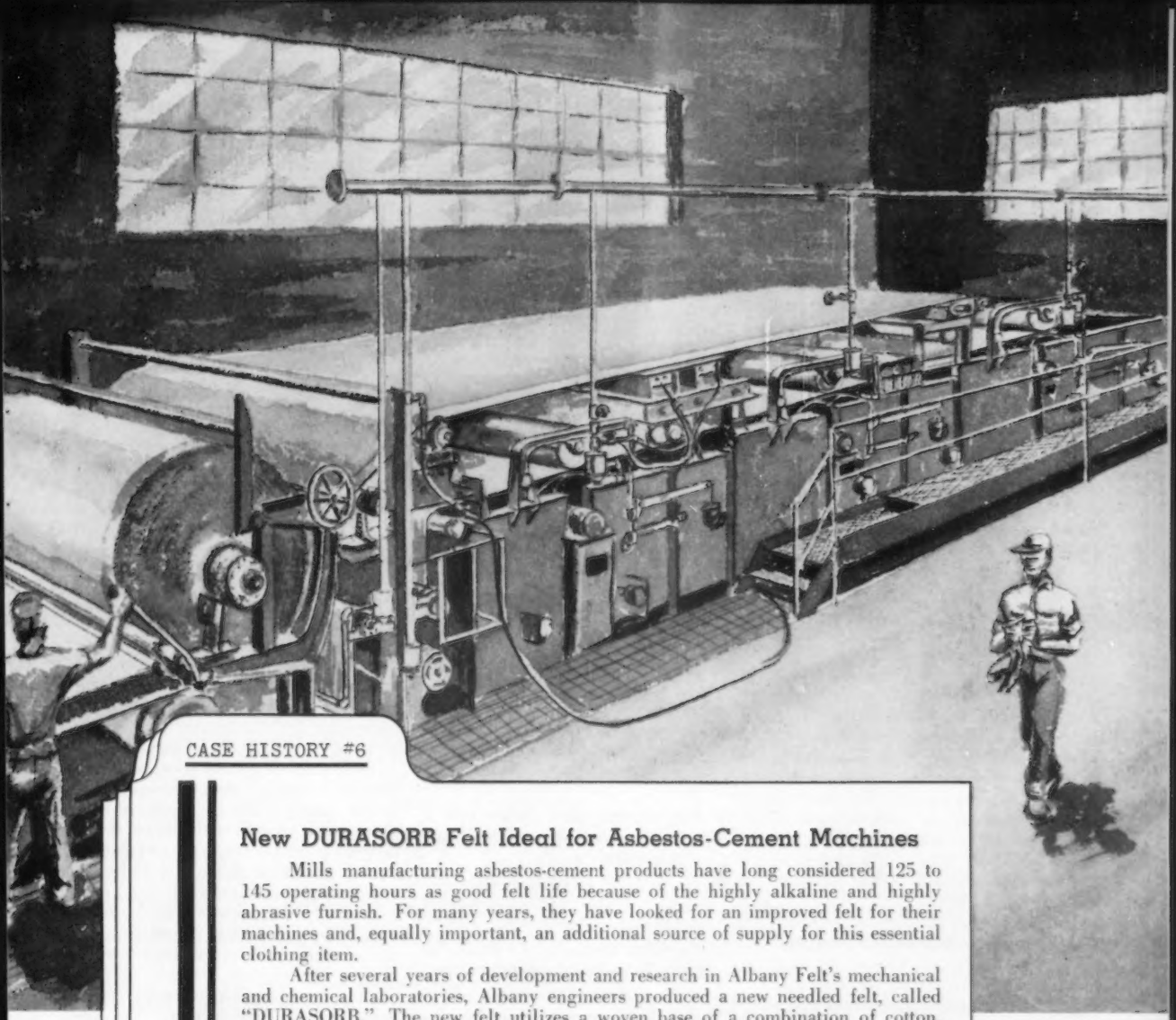
Whole tank cars of prepared liquor could not be utilized during the burning tests, due to the difficulty of unloading them. The unloading which had to be conducted during the burning operation was hindered in some cars by plugging of the outlet valve by solids that were formed during the prolonged storage. The formation of this material has been discussed under "Evaporation" and as it has been pointed out, provision has been made in the flow sheet to insure against its occurrence in an operating mill.

Sulphur Dioxide and Fume

The testing procedure on the stack gases followed the specification of Western Precipitation Corp. Bulletin 50 for particulate matter. Sampling ports were cut into the inlet flue of the cascade evaporator. At the same point, the concentration of sulphur dioxide coming from the furnace was followed by a device developed for these tests. The principle of operation is the same as the test known as the Reich method, in which the volume of sulphur dioxide laden gas necessary to discolor a known amount of iodine solution is determined. In this method, the volume of gas passed through the iodine solution is collected and measured. In the apparatus developed, the volume measurement was determined in terms of time necessary to discolor the iodine solution when a standard rate of gas flow was pulled through the apparatus. The micro flowmeter is used to set the standard rate. By using this method of volume measurement, a considerable large volume of gas could be pulled through the iodine solution than would have been possible had it been necessary to collect the gas and measure it. It is thought that the use of this technique increased the accuracy of the measurement by an order of 10. The gases drawn through this apparatus were cleared of their particulate matter by pulling them through a standard sampling thimble that is used in Western Precipitation Corp. particulate test procedure. This test apparatus showed from 6,000 to 7,000 of p.p.m. of SO_2 in the flue gases during the burning test.

Experimental Burning

There was no by-pass across the cascade evaporator, so water had to be run into the cascade during the evaporator tests; this protected the apparatus and the electrical precipitator. Cooling from



CASE HISTORY #6

New DURASORB Felt Ideal for Asbestos-Cement Machines

Mills manufacturing asbestos-cement products have long considered 125 to 145 operating hours as good felt life because of the highly alkaline and highly abrasive furnish. For many years, they have looked for an improved felt for their machines and, equally important, an additional source of supply for this essential clothing item.

After several years of development and research in Albany Felt's mechanical and chemical laboratories, Albany engineers produced a new needled felt, called "DURASORB." The new felt utilizes a woven base of a combination of cotton, wool and synthetic yarns, plus surface fibers of wool and synthetics which are needled into the base by a special method developed by Albany Felt.

RESULTS: Trial runs of the new DURASORB felt on machines producing asbestos-cement board have shown increased life of 25 to 35% above average life of felts previously used. In addition, since Albany base fabrics are woven endless, the difficulty formerly encountered with joins or splices has been eliminated — Another example of trouble free performance meaning more production.

For improved felt performance on your machines, call in your Albany Felt Sales Engineer. His analysis of your problems, together with the efforts of the industry's top team of Service Engineers, Designers, Research and Laboratory Specialists, will bring you the famous "blue line" felts you need to help produce more *saleable tons per day!*

ALBANY FELT COMPANY

"THE WORLD'S LARGEST MANUFACTURER OF PAPER MACHINE FELTS"

Main Office & Plant, Albany, N. Y. Other plants: Hoosick Falls N. Y., N. Monmouth, Me., St. Stephen, S. C., Cowansville, P.Q.

the cascade was also necessary for the electrical precipitation to act properly. See Figure 5.

The dust from the electrical precipitation was discharged into the usual salt cake mixing tank, which is ordinarily connected to the inlet of the cascade evaporator. Kraft liquor mixed with the precipitation catch was sent to the thick liquor storage during testing. Part of the liquor from the second test had dropped in solids content by precipitation to below 55 percent solids. During the period when low solids liquor was burned, an oil torch was fired into the ports close to the hearth of the furnace.

An observation that was made during the burning of the liquor under proper conditions, was that the primary air ports had to be stopped down to a considerable greater degree with this liquor than with kraft, in order to form the proper size of ash heap and obtain the proper reduction of the smelt.

The explanation of this phenomena is obvious from the ultimate analysis, as the liquor carries into the furnace considerably more oxygen than that of kraft liquor. It is an interesting point that a higher oxygen content of fuel will give a greater efficiency in a boiler, as it reduces the amount of combustion air needed in the furnace. The heat lost in the exit gases from the boiler is smaller, as the higher oxygen fuel, by requiring less air, produces a lower volume of exit gases. The B.T.U. value of the liquor solids was 6,700 which is the same B.T.U. value of black liquor solids in the kraft thick liquor.

The use of a forced circulation evaporator as part of a multiple effect required an expenditure of one-fifth of the heat to raise the concentration of the liquor from 52 to 65 percent, as does the direct contact evaporator. In boiler calculations, the direct contact evaporator is considered part of the boiler system. The combination of using a higher concentration of fuel and a higher oxygen content fuel of the same B.T.U. value, raises the boiler efficiency for the same I.D. fan outlet temperature to greater than that of kraft liquor.

It is understood that more boiler heat exchange surface must be provided in order to give the same outlet temperature, for the direct contact evaporator in the usual kraft system, acts as part of the boiler heat exchange mechanism.

Results

The test of the smelt which was sampled every hour from each smelt spout, showed that the sulphidity to be expected from operating the system would be the highly desirable fifty percent, and that for this reason, the recovery system could be operated on all types of sodium base sulphite liquor.

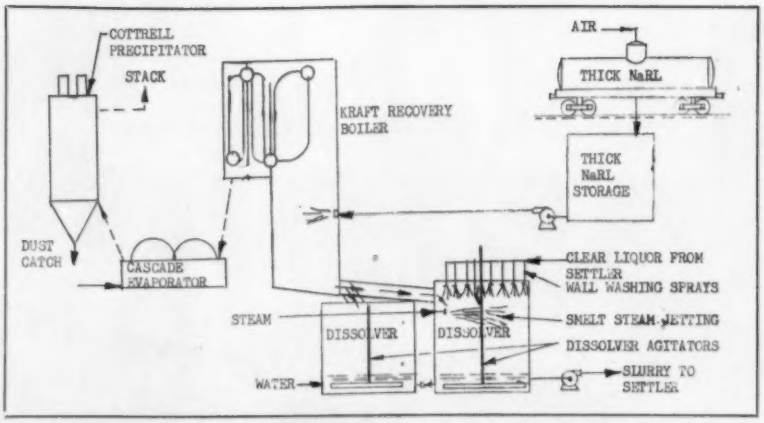


FIGURE 5. LIQUOR BURNING SYSTEM used in existing kraft mill equipment. Recovery of crystalline sodium carbonate is shown at right.

PART V SUMMARY AND CONCLUSIONS

The Port Edwards sulphite mill was converted to sodium base pulping in order to produce spent liquor for the recovery system tests. At this mill site a semi-commercial pilot plant was constructed that was capable of treating 40 gallons per minute of spent liquor. The pilot plant:

1—Proportioned spent liquor with a solution of sodium sulphide and sodium carbonate.

2—Clarified the solution of pulp and of the calcium carbonate formed in the proportioning step.

3—Converted the liquor to a kraft type liquor by means of a novel reaction.

4—Evaporated the liquor at a pH of 10.8 to 65 percent solids in mild steel bodied evaporators.

The thick liquor was stored in steam heated railroad cars until it could be scheduled for burning.

The liquor was burned in the Nekoosa Kraft mill's modern kraft recovery boiler. The burning results show that in the smelt the molar ratio of sodium sulphide to sodium carbonate will be approximately one to one, whether processing acid or neutral sulphite liquors. An auxiliary process was tested for separating pure sodium carbonate from the smelt. This process depended upon the differential solubility between minute and large crystals to purify the sodium carbonate. This process was worked out to provide an inexpensive method of utilizing a kraft mill for prolonged runs for test purposes.

Sufficient operational data was gathered from the work to permit the authors to size and specify a plant. As there were comparable operations between kraft recovery and the system tested, the authors in cooperation with the Nekoosa-Edwards Paper Co. were able to run an operational cost analysis of the system.

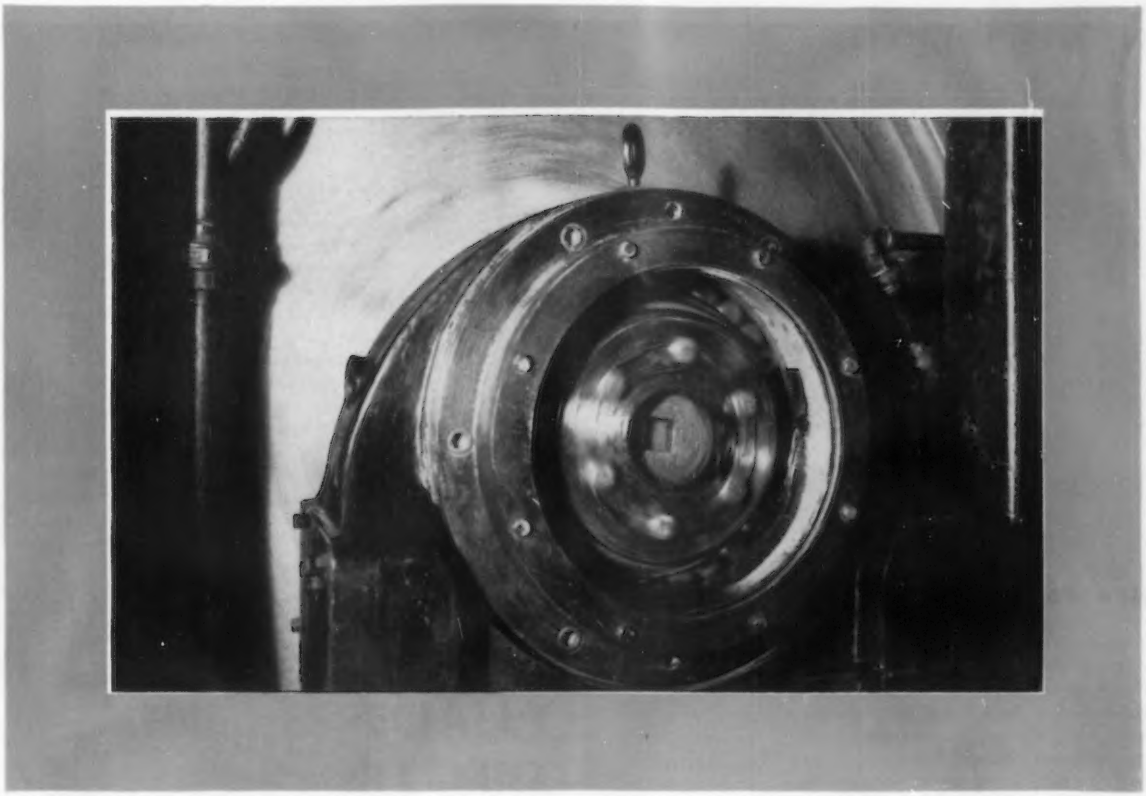
It was learned from the pilot plant operations that the thick liquor in the evaporation system should not be stored at more than 45 percent solids and must then be finished in the concentrator just before firing. The evaporation tests showed that the pH of the liquor should be held at 10.8. The results of the sulphidity tests show that in order to maintain a material balance for the system, that sodium carbonate should be added in excess to acid spent liquor over that necessary for calcium carbonate precipitation.

The pilot plant should not be considered a demonstration mill. The test work that has been done makes it possible to utilize a combined kraft and sulphite mill as a demonstration mill.

The study of the results show that the process is technically feasible and economically attractive to a mill of over 150 tons daily production, without taking into consideration the pulping advantage of sodium base.

Next week's issue will carry a companion article by the same authors. It will describe a novel new jetting method for recovery furnace smelt, also a simple but ingenious system of obtaining almost pure sodium carbonate from the dissolving tank solution so that the sodium carbonate can be used directly in liquor preparation.

Also contained in the same issue will be a simple description of the whole process.



an important bearing on production

The dryer roll bearing pictured here is off to the right start for a long trouble-free life—lubrication with Gulf Harmony Oil.

Chances are that it will stay clean longer and cost less to maintain over the years.

This outstanding oil not only keeps bearings clean but extends filter life. Its four-way protection includes effective protection against excessive wear over a wide range of temperatures, protection against rust, protection against the formation of harmful sludge and varnish, and protection against emulsification in the system.

A trained lubrication expert—the Gulf Sales Engineer—is always available not only to recommend the proper grade of this quality oil but also to help you with any lubrication problem. Call, write, or wire your nearest Gulf office today.

Gulf Oil Corporation • Gulf Refining Company

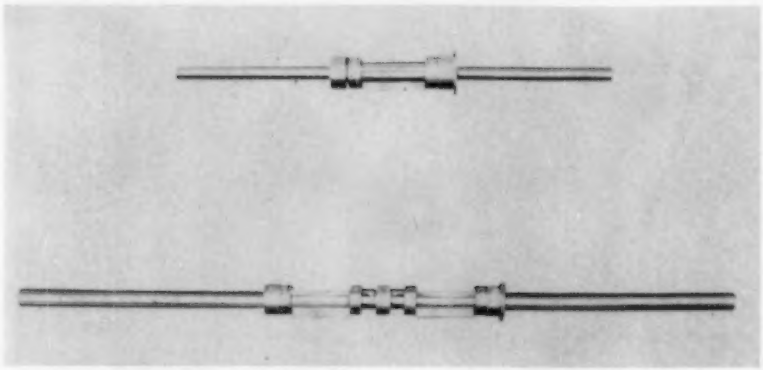
1822 Gulf Building, Pittsburgh 30, Pa.

GULF

USE GULF HARMONY OIL

for better lubrication of dryer roll bearings

NEW EQUIPMENT AND SUPPLIES



New Positive Spindle Developed

A new type self locking mill roll unwinding shaft is announced by Schultz Engineering Corp., 190 Banker St., Brooklyn 22, N. Y. Originally designed for use on the firm's automatic rewinding machines, the spindle is now in production and available for any machine where unwinding parent rolls is required.

The spindle is manufactured in various sizes, with each size having a range of web widths. In operation, the spindle shaft is simply inserted into the mill roll core, to a flange stop, where it is automatically locked. No further adjustments are necessary. A change of work can be made quickly with two setscrews and an Allen wrench. The self locking shaft, is entirely mechanical and needs no compressed air.

Lightweight Electrode Holder Announced

A lightweight arc welding electrode holder has been announced by Tweco Products, Inc., Wichita, Kansas. Called No. AL-300, the holder has a body and upper lever made of high conductivity aluminum forgings. The holder weighs 13½ ounces which is a 50 percent reduction in weight from conventional holders made of copper castings.

The forging of the metal parts gives the holder high tensile strength and increases the conductivity. Both the upper and lower replaceable jaws of the holder are made of pure copper and are cadmium plated to resist corrosion and to prevent weld spatter sticking to the jaws. All parts of the holder are easily replaceable.

New Paper-Plastic Glues Announced

A new series of synthetic-resin base glues have been designed and are now being made available by Paisley Products, Inc., 630 W. 51st St., N. Y. 19, N. Y. The line of adhesives was especially designed for use with the new packaging plastics, in plastic to paper applications.

The total line consists of nine types. Pliastic-241, the most versatile of the new series, is recommended for surface treated polyethylenes, Mylar and heavily waxed glassines. Types 242 and 243 are of a heavier viscosity and fit application techniques used in packaging machinery.

Pliastic 1707 is formulated for adhering paper labels to a wide variety of difficult surfaces which include lacquer, varnish, metal, plastic, and plated metal. It was designed with high speed packaging and labeling operations in mind.

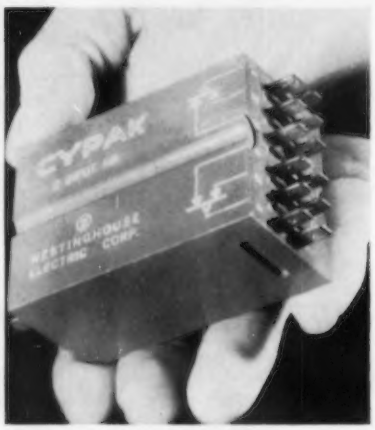
Types 5515 and 8019 are polyvinyl acetate adhesives which are intended for use in window packages incorporating various type of plastic films.

High Cost Paint Has Unusual Properties

The development, manufacture and sale of what is probably the highest priced paint in the world has been announced by the J. Landau Co., Carlstadt, N. J. Known as Lankote Fluoro-B, the product possesses unusual resistance to corrosion, and protects metal and wood surfaces from highly concentrated acids and alkalis.

Despite the high selling price and the fact that the product covers less area than ordinary paints (approx. 250 sq. ft. per gallon), cost reductions up to 33 per cent are possible by using mild steel for equipment fabrications and painting with the product instead of purchasing stainless steel for the job.

The application procedure is similar to ordinary paints. The product dries in a few minutes and requires no baking to become effective.

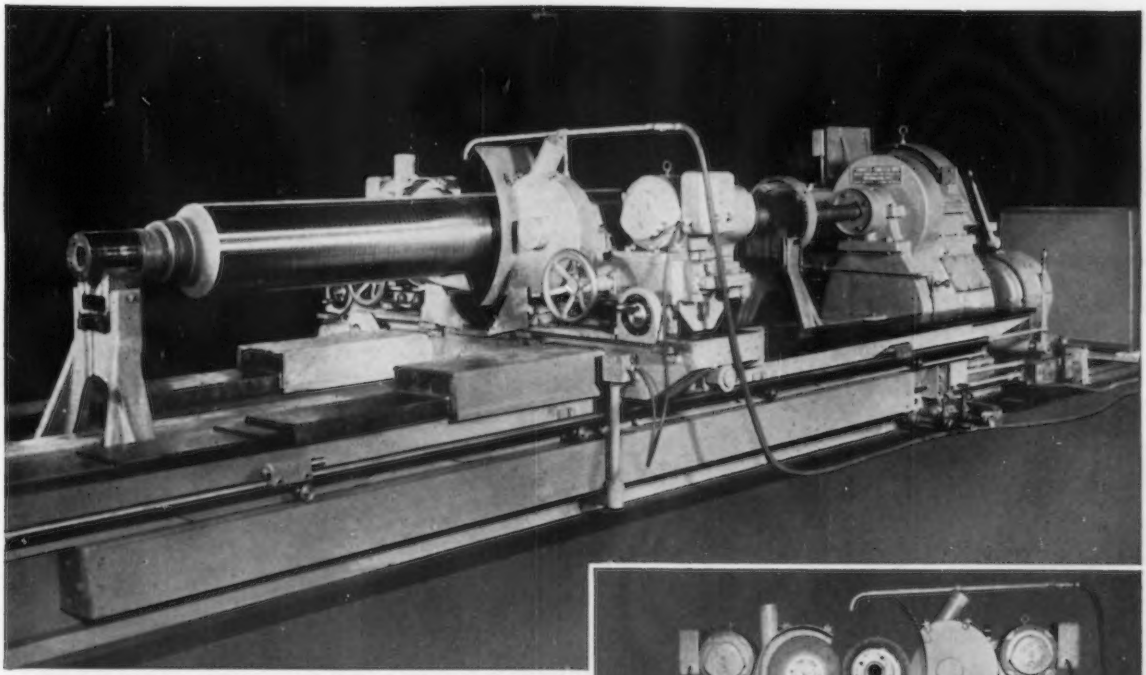


Unit for Automatic Controls Improved

A new improved version of the Cypak static switching components, which features design simplicities, lower system costs, greater efficiency in space use, and increased ruggedness in construction to guard against mechanical and environmental hazards, is announced by Westinghouse Electric Corp., 401 Liberty Ave., Box 2278, Pittsburgh 30, Pa.

Components are modular plug-in cartridges roughly three in. high, two in. wide and two in. deep. They are encapsulated in polyester resin and fitted with terminals on the upper and lower faces. Each module plugs into a specially designed power channel. Studs are used to lock the modules into a compact, nearly solid assembly. When more than 15 modules are required for a system, additional channels can be mounted side-by-side or end-to-end. Singly or mounted, the units are capable of withstanding greater mechanical shock and adverse environments.

Simplicity for assembly and mainte-

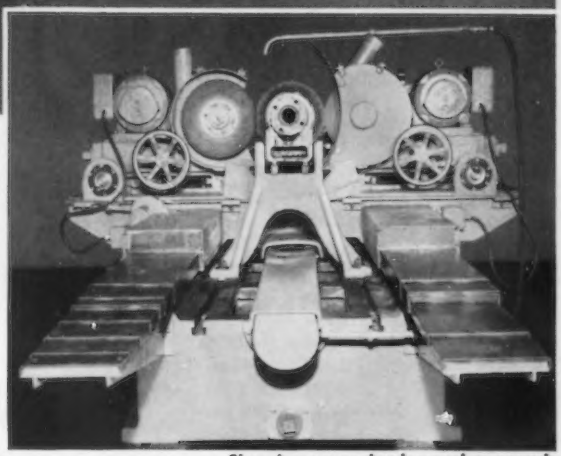


DESIGNED ESPECIALLY FOR THE SMALL MILL

...This New #3 Type GHV

LOBDELL

ROLL GRINDER



Showing one wheel-guard removed

...offers these outstanding features:

- Wider and heavier bed and carriage construction.
- Inverted Vee-ways . . . stronger, better lubricated.
- Metallic telescoping way-covers give full protection.
- Crowning device . . . newly designed to give full range of desired crown curves.
- Choice of A.C. or D.C. electrical equipment to suit mill needs.
- Grinding wheel mounted on end of wheel spindle for quick wheel change.
- Handwheel control on side of wheel-head permits observation of work while feeding wheel.
- Coarse and fine feed of wheel at operator's choice.
- Automatic wheel infeed to compensate for wheel wear on chilled iron.
- Self-contained wheel spindle . . . forced feed lubrication with oil pressure control.

Maximum simplicity of design for fool-proof and error-free operation so far as effective design can help . . . maximum accuracy of result on both iron and rubber covered rolls. Dust collection equipment available (not illustrated here).

Capable of grinding rolls from 6" to 32" or 36" and with face length according to bed length . . . weighing 16 tons or less.

Write for detailed information on this new #3 Type GHV LOBDELL Grinder.

• CHILLED IRON ROLLS • MACHINE CALENDER STACKS • ROLL GRINDING MACHINES
• ROLL CALIPERS • KNIFE GRINDERS • ABRASIVE CUT-OFF SAWS

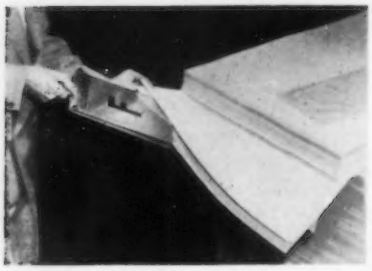
1836 **LOBDELL DIVISION** 1956

UNITED ENGINEERING AND FOUNDRY COMPANY

WILMINGTON 99, DELAWARE

nance is furthered by numeral identification of each terminal and by a logic diagram printed directly on the module. Phasing the module has been made simple; an external color dot indicates how the unit should be positioned. To reverse its phase relationship it is only necessary to remove the module, reverse it, and plug it in again.

Quantity production of the new units is currently under way, the company announced, and the equipment will be available commercially in June.

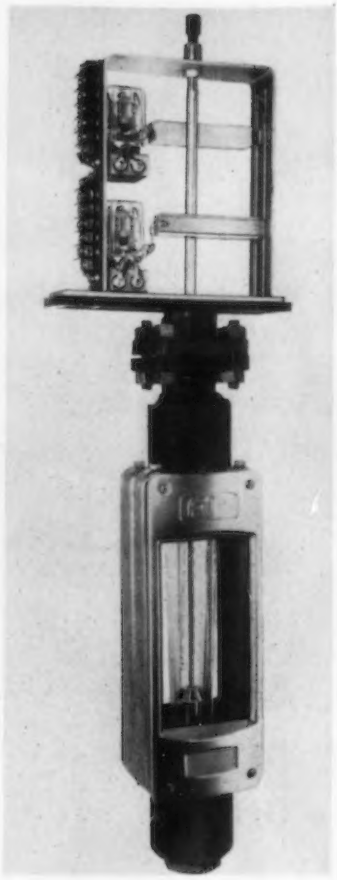


Sampler Protects Mill Moisture Lab Samples

A new product, called Sample Pro-Tak-Tor, designed to simplify the taking of paper samples for moisture test purposes, and to protect them until they are used, is now being made available by Paper Industry Instruments, Inc., 3398 Ingleside Rd., Cleveland 22, Ohio.

The product is designed for paper and board manufacturers and converters. It eliminates the hazard in off-the-machine moisture measurements of getting an unrepresentative sample to the laboratory, and was initiated in recognition of the fact that 80 per cent of the initial surge towards equilibrium occurs within 20-30 seconds in fine papers, and within 60 seconds in heavy papers and boards. Sometimes this change can actually take place before the samples can be placed in the usual jar or the cross-machine sample can be folded.

The unit consists of a specially constructed metal clip, and a supply of special plastic pouches, into which samples are inserted and sealed. Operation is simple. The usual cross-machine and machine direction slits are made. The corner of the top ply is slightly raised and the top and bottom plattens are inserted to envelop the sample. The sample is removed and inserted in a plastic bag. Ends of the bag are immediately folded and the whole protected sample is put back into the sampler until it is ready to be used in the laboratory. The sample units are available in five sizes, with protective pouches to match.



Flow Alarm Is Vibration-Proof

A low cost vibration-proof flow alarm is announced by the Fischer & Porter Co., 553 Jacksonville Rd., Hatboro, Penn. Known as Ratolarm, the product uses two snap-action electrical contacts, hermetically sealed in a glass tube, which are drawn together to set off the alarm by passage of a magnetic float extension rod.

The switch can be positioned in the mounting frame either above or below the magnet in the float extension rod to give a signal for either high or low limits of flow. If placed above the magnet, it will set off the alarm when increasing flow causes the magnet to rise to a predetermined position. Below-magnet positioning sets off the alarm when the flow falls below the desired rate or fails entirely. One switch can be set above and another below the magnet to give high and low alarms.

Unlike the mercury switch, it is insensitive to vibration and can not give false alarms. At the same time, it has no electronic components, therefore costs less, is more reliable, and requires less maintenance than inductance coil alarms.

The product is normally supplied with a dust-proof, plastic-enclosed, plug-in relay. This permits easy inspection of contact points and allows the entire relay to be changed in seconds.

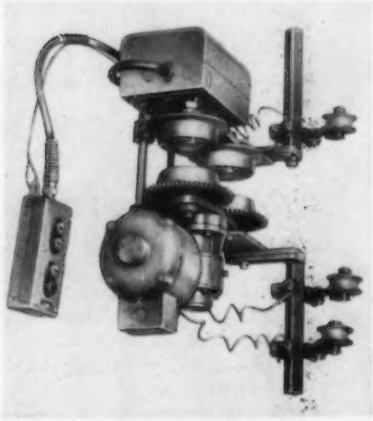
The unit is constructed with a safety feature, which ensures a signal will always result if the alarm circuit fails. Explosion-proof construction and/or hermetically sealed relays are also available.

Wax-polymer Development Offered

A new series of wax-polymer concentrates which feature the use of fliolite with either paraffin or microcrystalline waxes, is being introduced by the Resinous-Reslac Department of the Borden Co., 350 Madison Ave., N. Y. 17, N. Y.

Offered under the name Reswax Concentrates, the coatings are designed primarily for paper converters where low viscosities and high polymer concentration are important. Good bond strength, absence of tack and improved adhesion to paper or foil are among its other features.

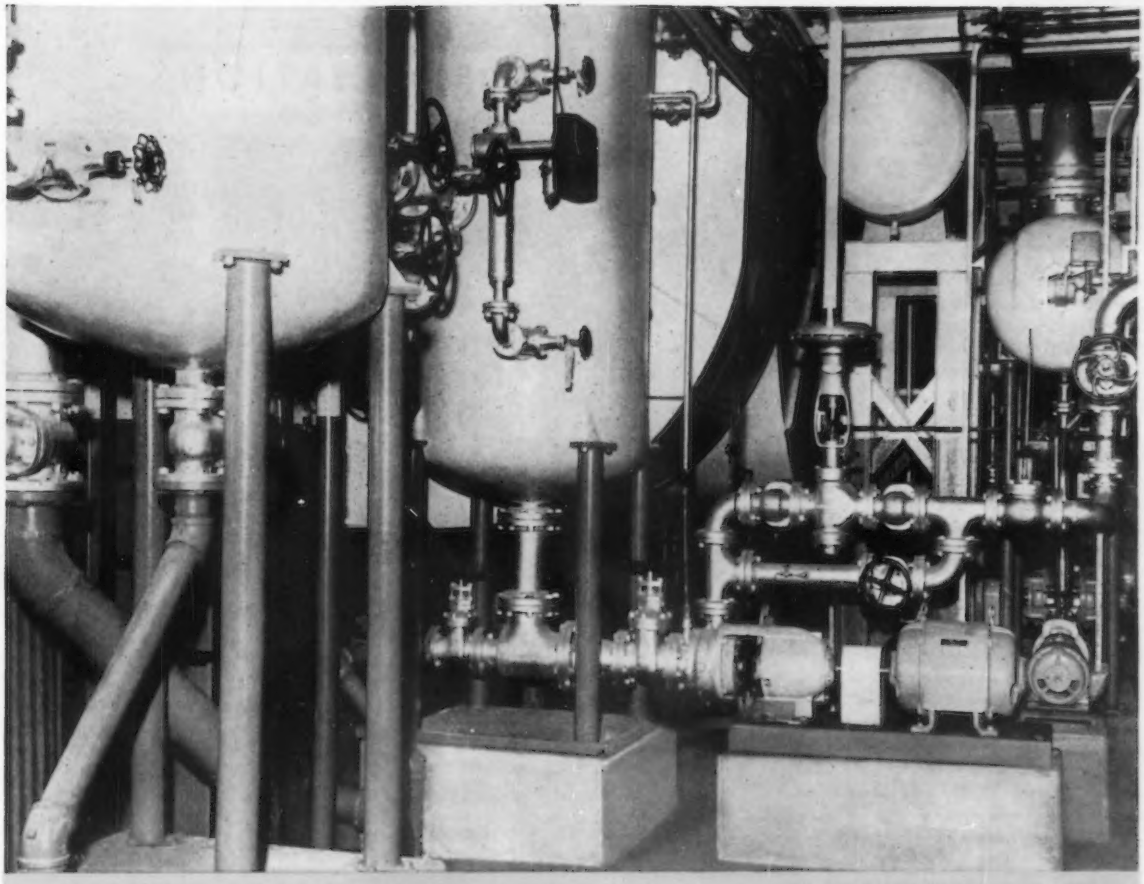
Reswax users can reduce the concentrates to the desired concentration in their own plants by addition of paraffin or microcrystalline. The new products further complement available concentrates containing Vistanex, Polyetheylene, Butyl, S-Polymer and other synthetic rubbers and resins.



Trolley Hoist Provided In New Capacity

Shaw-Box Crane & Hoist Division of Manning, Maxwell & Moore, Inc., Muskegon, Michigan, announces the development of a lightweight single speed push-botton controlled motor driven trolley for installation on electrically powered hoists having capacities of from 1,000 through 2,000 pounds. Known as Series "600" 'Load Lifter' it complements the 1,000 to 12,000 pound capacity Series.

The new series is available with op-



Typical large Fulton system on big, fast Fourdrinier in Maine

KNOW ANY BETTER WAY

to improve your operation?

Fulton dryer drainage systems are going onto old machines and small machines as well as onto today's giants—and the reasons are plain.

Automatic control of the drying operation under all conditions and at all speeds.

Properly graduated temperatures from the wet end dryers clear on through the section.

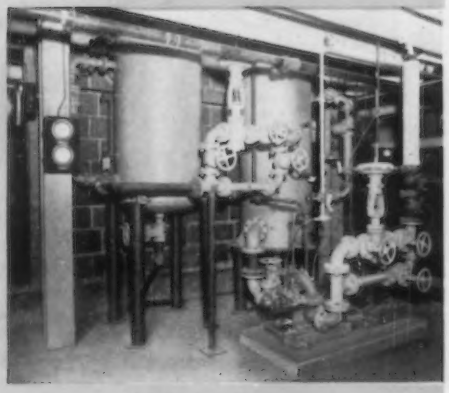
Uniform drying clear across regardless of machine width or speeds.

Less broke. Less shrinkage. Less cockling or curling.

Most important of all, Fulton systems remove slow drying bottlenecks and pave the way for faster operations and higher production schedules.

Because the smaller the machine, the more simple the system, Fulton equipment for older and smaller machines involves only a modest investment—and that soon amortized.

Have us explain more fully.



Typical two-stage condensate return unit with automatic controls.

ROSS MIDWEST FULTON CORPORATION

DAYTON, OHIO

Subsidiary of J. O. Ross Engineering Corporation

tional traversing speeds of 65 or 100 feet per minute. Models are available to meet all standard voltages.

Among new construction features of the product are the wide-section side plates of non-fracturing rolled steel plate and the steel traverse wheels with hardened treads. Traverse wheel span is adjustable to fit 5 to 12 inch American Standard tapered flange I-beams, permitting relocation of the trolley on various size I-beams without reworking the trolley. Traverse wheels rotate on anti-friction ball bearings.

The driving mechanism consists of a totally enclosed direct-drive motor and sealed-in worm drive unit operating in an oil-bath. A mechanically interlocked, 24 volt, four button control station eliminates the possibility of electrical damage.

Motor Operated Valve Offer Versatile Installations

A new model globe valve, designed for use with ¾ to 6 in. pipe, is announced by National Controls, Inc., 400 Homer St., Newton Centre, Mass. The unit is powered by an induction motor which drives an oil immersed gear train and cam shaft to open and close a bronze or iron valve. Called HGV-562, the product incorporates two single pole, single throw limit switches to control additional valves or relays. One switch is always closed in both open and closed valve position.

A hand wheel is provided which permits operation in event of power failure. Input is 25, 110, or 220 volts. Auxiliary switch rating is 5 amps. Steam pressure to 100 lbs., or water pressure to 150 lbs. can easily be handled with the unit. The maximum rating decreases as the valve increases. The product may be mounted in any position.

New Plastic Cutting Sticks

Harris-Seybold Co., 4510 E. 71st St., Cleveland 5, Ohio, has taken over national distribution of a successful new plastic cutting stick for paper cutting machines, a company spokesman announced. The cutting stick, called the Seybold-Cefaly Stick, is made of a milk-white plastic, machined and planed to tolerances of .001 inch. The plastic is flexible, odorless, non-toxic and flame-resistant.

Uniform density and give of the special plastic keeps expensive knives used in paper cutting machines sharp much longer. In addition, knife nicks are minimized, costly downtime for knife replacements is greatly reduced, and grinding costs can be reduced as much as 50 percent. The sticks last five times longer than wooden sticks. The plastic also will not chip, split, or warp under operating conditions.

NEWS OF ASSOCIATIONS

JUNIOR AWARD PARTICIPANTS at the April meeting of Northern District of Empire State TAPPI. Lawrence Slentz (St. Regis Paper Co.) won the award for a technical paper on "Evaluation of Natural N. Y. Hardwood Groundwood." At the Presentation in Watertown, N. Y. were (l. to r.) Paul Anderson (St. Regis), program chairman; Mr. Slentz; Douglas Lynch (Fischer-Porter), guest speaker; Roger Schwartz (Knowlton Brothers), district chairman; John Parsell (J. P. Lewis), district treasurer.

Open Industry Technical Conference

The Annual Technical Conference of the A.P.P.A. Committee on Coordination of Research will be held at the State University of New York College of Forestry, Syracuse, N. Y. on May 8. The program, which follows, is under the joint sponsorship of the University of Maine and the State University of New York College of Forestry. Anyone interested is cordially invited to attend, but should give advance notice to Prof. F. W. O'Neil of the College of Forestry at Syracuse.

MAY 8

9 a.m.—Welcome to the College by Dean Shirley, introduced by Chairman of this Committee.
Remarks by E. W. Tinker.
"Kinetics of wet strength resin curing in paper," Prof. S. E. Church.
"Hydraulic characteristics of pulp stock," Dr. R. E. Durst.
"Handsheet pressing pressures on physical properties of pulp test sheets," Prof. C. P. Donofrio.
"Characteristics of cellulose fibers," Prof. A. J. Chase.
"Hemicellulose extraction from wood," Dr. C. Schuerch.
"Semichemical Pulping," Dr. R. M. Husband.
"Permeability of Plastic Treated Papers," Dr. V. T. Stannett and Dean E. C. Jahn. (Paper to be presented by Dean Jahn.)
Close meeting at 12:15 p.m.
Luncheon at Drumlins at 12:30 p.m.

Afternoon

Tour of facilities until 3 p.m.

General paper on the pulp and paper program at the University of Maine by Prof. L. C. Jenness.

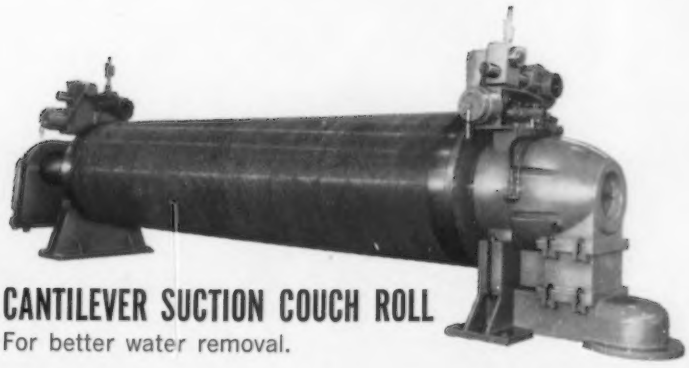
General paper on the pulp and paper training program at the College of Forestry, Syracuse, by Prof. F. W. O'Neil.

General paper on research at the College of Forestry by Dean E. C. Jahn.

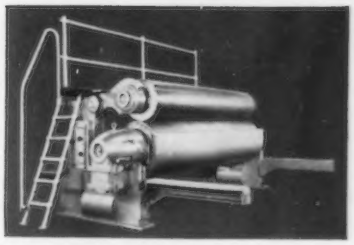
Schedule Testing Conference

The Seventh TAPPI Testing Conference will be held at the Loraine Hotel, Madison, Wis., September 11 to 13.

Sponsored by the Testing Division of TAPPI, the conference is under the general chairmanship of E. E. Stephenson, Sutherland Paper Co., Kalamazoo, Mich. The technical program is being prepared by R. H. Lace, Riverside Paper Corp., Appleton, Wis., and publicity is being looked after by G. J. Gill, Penick & Ford, Ltd., Cedar Rapids, Iowa. Local arrangements will be planned by personnel of the Forest Products Laboratory in Madison. P. W. Bartholomew, Minnesota & Ontario Paper Co., International Falls, Minn., and C. E. Branden, Howard Paper Mills, Dayton, Ohio, are chairman and vice-chairman, respectively, of the sponsoring Testing Division.



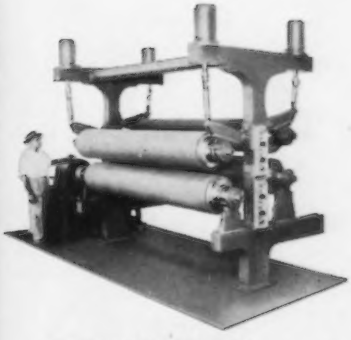
CANTILEVER SUCTION COUCH ROLL
For better water removal.



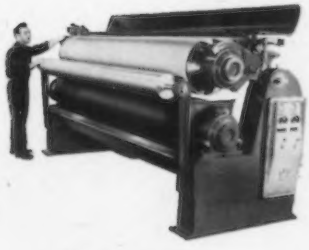
SUCTION PRESS
For a higher drying rate.

WINDER AND SLITTER
For uniformly wound straight rolls.

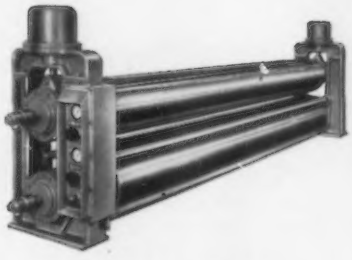
These Manchester Machines can make money for you



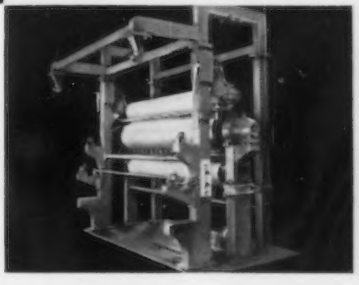
PRIMARY PRESS
For quality control and top-quality board.



SIZE PRESS
For a continuously uniform sheet.



SMOOTHING PRESS
For improved finish and uniform caliper of board.



SUCTION DRUM PRESS
For uniform high quality board.

THE MANCHESTER MACHINE CO.
MIDDLETOWN, OHIO

SPECIALISTS IN DESIGNING AND BUILDING PAPER MILL MACHINERY

Technical Papers Contest

Features Middletown Meeting

Ohio TAPPI continues its active public relations program.

Ohio Tappi initiated its recently announced awards program for original papers read before the section with the presentation of three papers at the April meeting in Middletown Ohio.

The three authors were introduced by Kenneth M. Grasse (Howard Paper Mills), program chairman of the evening. The papers will be judged as follows: 80 percent on merit of content and 20 percent on method of presentation before the section. Awards and announcements of the winning paper will be made on May 10, when the section will hold its annual ladies' night meeting at the Hartwell country club in Cincinnati.

PRIZE PERFORMERS AT OHIO TAPPI—Top three participants in the Section's contest for best original technical study are (l. to r.) Howard's Robert Brown, Mead's Richard Kelley, Gardner's Charles Sweitzer (reading for William Friend).

"Use of Sodium Aluminate in a Closed System to Control pH"

Robert M. Brown
Aetna Paper Div., Howard Paper Mills Inc., Dayton, Ohio

Considerable foam and sticking on the presses were experienced due to low pH as the system was progressively closed. A system was installed which automatically adds sodium aluminate to the fan pump to raise pH. Boiler feed water is used since it was found that there was too much hardness precipitation with ordinary mill water when the Sodium Aluminate is mixed. The solution is mixed at a concentration of approximately 2/3 lb. per gallon. The system includes a pH recorder which was found to be of help to stock preparation personnel in alum addition at the beaters. An estimated two pounds of the material are added per ton of paper produced.

Results and measured benefits included: decreased foam and resulting economy de-foaming agents, increased filler retention with resulting increase of opacity and cost reduction of glue, strength improvements, decreased machine corrosion.

"Flotation of Papermaking Fibers"

William H. Friend
Gardner Boards & Carton Co.
Middletown, Ohio

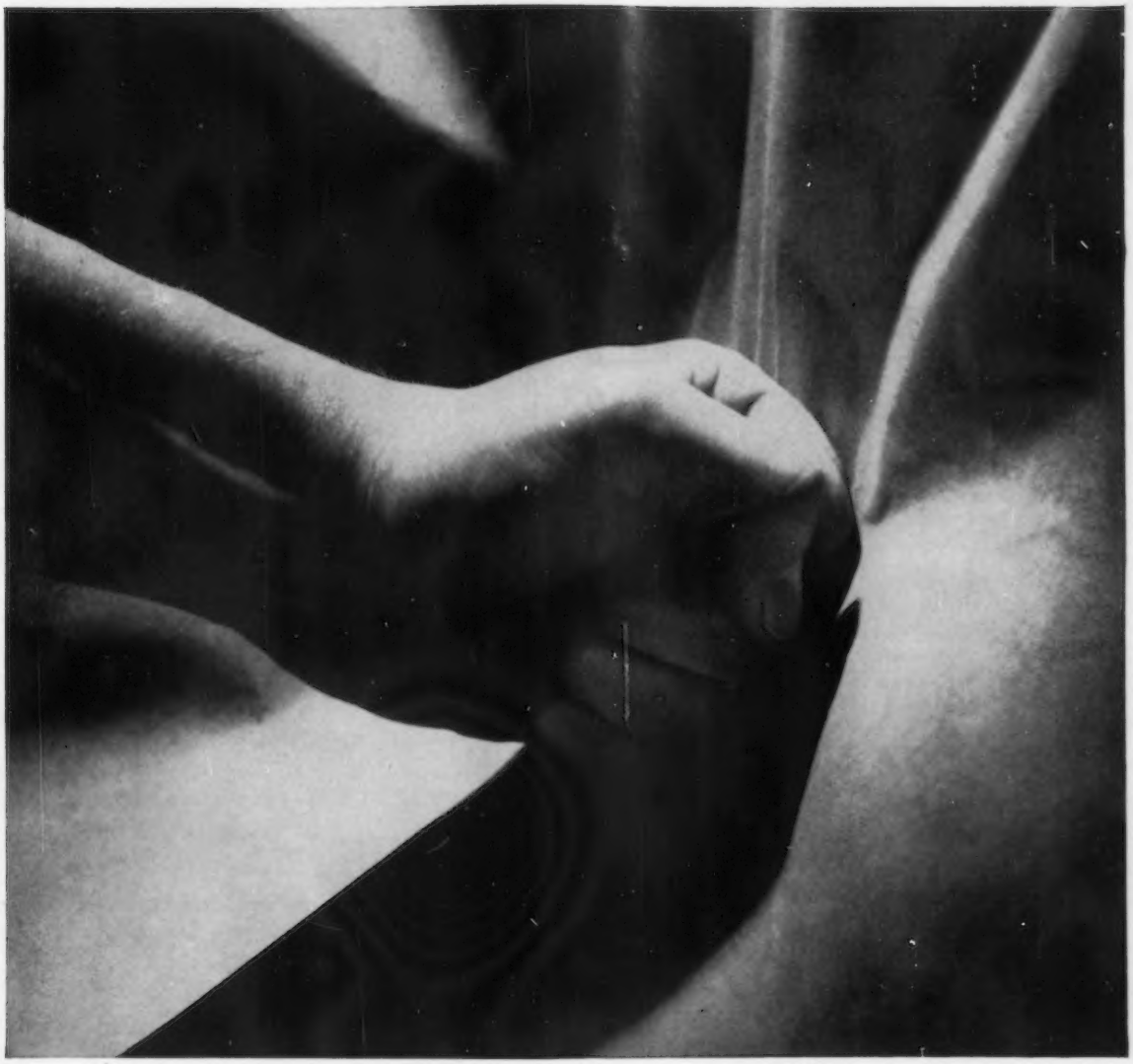
The paper discussed various aspects of the theory of flotation of papermaking fibers with special emphasis on flotation-type savealls. The following conclusions were reached as the result of laboratory and mill investigations: Bubbles of appropriate size must be formed in order to have effective flotation. Air dissolved under pressure is available for fiber flotation when the pressure is relieved. Turbulent areas of water flow will bring about bubble formation during or after pressure release. Agents which reduce the wetability of fiber surface will improve fiber flotation. The addition of alum to stock to a low pH (5.2) will result in poor fiber flotation when other materials are not present. Solid fillers such as clay and titanium dioxide must first be coagulated and have their surfaces reduced in wetability before they may be removed by the flotation process.

"Heating Unit for Hot Melt Drawdowns"

Richard F. Kelley
Mead Corp., Chillicothe, Ohio

An electrically heated metering rod holder has been designed to improve the application of hot melt coatings to paper sheets in the laboratory. The unit supplies heat continuously to the metering rod to effect smooth, uniform coatings. The device also allows rapid evaluation of hot melt compounds for development work.

Best results have been obtained with medium to low viscosity melts having relatively short melting point ranges; however, polyamide resins also have been successfully applied and the smoothing of wax-polyethyline films has been satisfactory.



New reinforcement quality for paper and paper products

You'll find that Pittsburgh Fiber Glass is importantly different for reinforcing paper products—a difference that means easier handling and better laminated sheets, manufacturers' joint tape and sealing tapes.

Key to this quality is found in the way we make fiber glass at the nation's newest fiber glass plant in Indiana. Here, PPG's 70 years of experience in glass-making has been applied to fiber glass. Result: continuous filament fiber of uniform diameter and quality. Reinforcing cloth woven of this high quality PPG yarn is made to specifications required for best performance in paper laminates.

Why not test Pittsburgh Fiber Glass on your own production runs soon? Complete information on Pittsburgh yarns, roving, and chopped strands, or the names of weavers supplying cloth made from Pittsburgh yarns, can be readily obtained from our executive offices or district sales offices in Chicago, Cincinnati, Cleveland, Detroit, Houston, Los Angeles, New York, Philadelphia or St. Louis. Pittsburgh Plate Glass Company, Fiber Glass Division, One Gateway Center, Pittsburgh 22, Pa.

FIBER PG GLASS

PAINTS • GLASS • CHEMICALS • BRUSHES • PLASTICS

PITTSBURGH PLATE GLASS COMPANY

Pulp Chemicals Assn. Elects Officers

Albert Scharwachter of Arizona Chemical Co., was re-elected President and Richard J. Spitz of Newport Industries, Inc., was elected Vice-President of the Pulp Chemicals Assn. at its second annual meeting held on April 18th in New York City.

Mr. Scharwachter and E. J. Calleton, National Southern Products Corp., were elected Chairman and Vice-Chairman, respectively, of the Tall Oil Division of the association and Lee A. Radeker, Champion Paper & Fibre Co., and E. M. Godat, Crossett Chemical Co., were elected to similar official positions in the Sulphate Turpentine Division.

Dernell Every will continue as Secretary-Treasurer and T. K. Heston as Assistant Secretary-Treasurer while Dr. Arthur Pollak remains as Technical Director and I. B. Oseas as Counsel. The association's office is at 122 East 42nd St., New York 17, N. Y.

The Pulp Chemicals Assn. was formed in 1955 as a trade association of manufacturers of chemical products produced by or derived from the sulphate wood pulping industry. It was the outgrowth of the Tall Oil Assn. (now the Tall Oil Division) formed in 1947 to initiate promotional and statistical programs for the tall oil industry. Crude tall oil production since then has increased nearly three fold to a level around 300,000 tons a year and further marked gains are in prospect. Activities have been expanded to include comparable programs for a Sulphate Turpentine Division, while the activiation of a Fatty Acids Division to include producers of tall oil fatty acids is contemplated within the next year.

Metropolitan TAPPI Plans Ladies' Night

The Metropolitan District of the New York State Section of TAPPI will hold its last meeting of the season on May 1 at Fraunces Tavern, Broad & Pearl Sts., New York City. As is their custom, they are inviting the ladies to this final meeting which is scheduled to start at 6:00 p.m.

Speaker for the evening will be Harry William McHose, vice-president of Barber & Baar Associates, Inc., a firm which deals in public relations. Mr. McHose has just returned from two years in Korea where he served in the multiple capacity at attache of the American Embassy, Chief Information Officer of the U. S. Information Service and as Information Advisor to the United Nations Command Office of the Economic Coordinator. He formerly represented such companies as Standard Oil Co., Bethlehem Steel Corp. and American Tobacco Co., in the field of public relations.

Mr. McHose will speak on "Paper's Place In the American Aid Program," a topic on which he is well versed and which will include some very interesting sidelights of his experiences overseas.

Book Paper Mfrs. Elect Officers

A. G. Sharp, Kimberly-Clark Corp., Neenah, Wis., was elected President, and Chairman of the Executive Committee of the Book Paper Manufacturers Assn., Inc. at its Annual Meeting in New York on April 12.

Mr. Sharp succeeds R. I. Worrell who is retiring as President of the Association after a career of many years in the paper industry, and H. W. Suter of Champion Paper and Fibre Co., Hamilton, Ohio, who has served for two years as Chairman of the Executive Committee. Mr. Worrell has consented to serve the Association as a Consultant during the next fiscal year.

A. G. Paine of New York and Pennsylvania Co., New York City, was re-elected Treasurer.

Guest Speaker at the Annual Meeting was James Reston of The New York Times. His subject, "Eyes on Washington," was a timely discussion of national and international political developments.

From England to Lake Placid To Talk on Dryer Felts

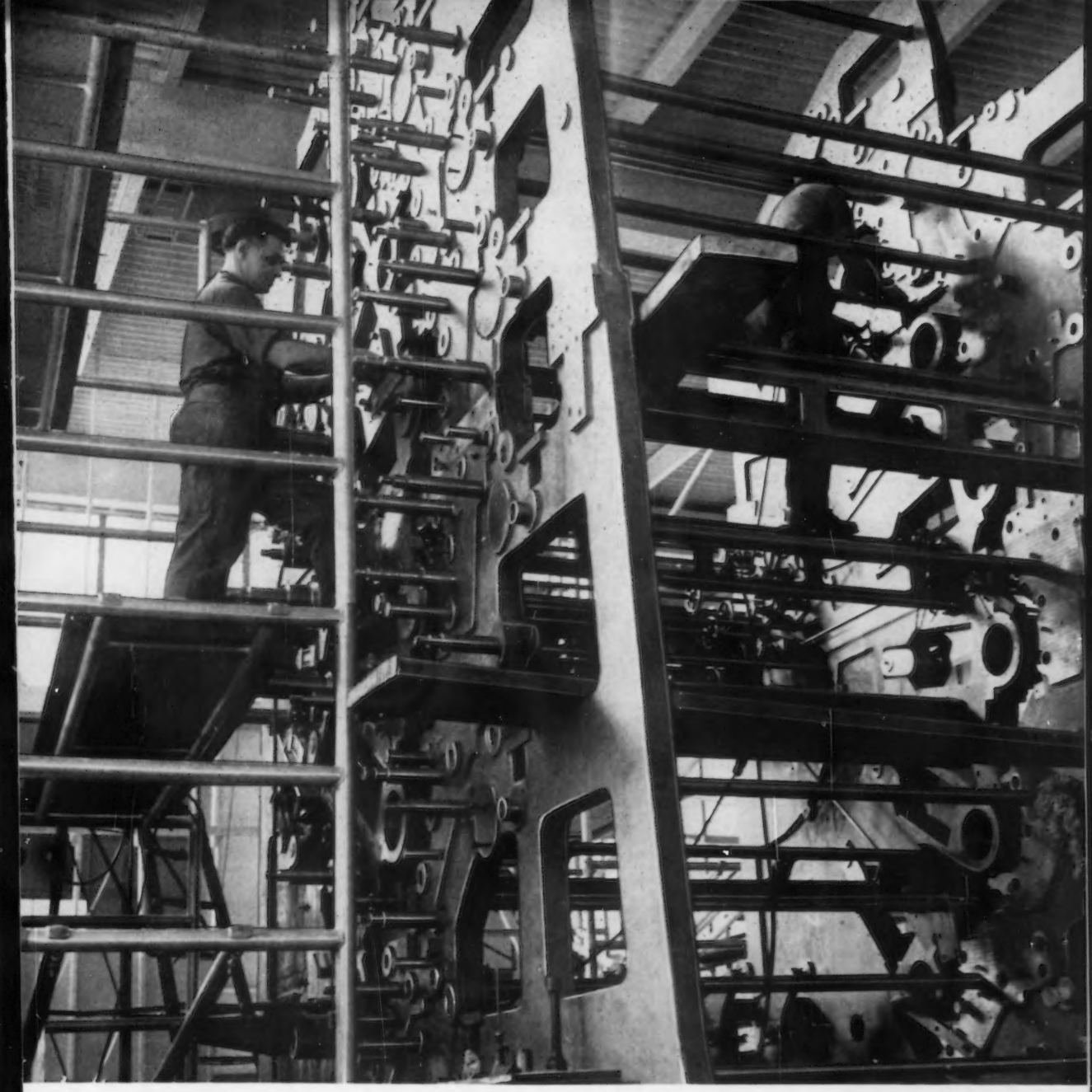
Dr. Edward Race, research head and director of Scapa Dryers, Ltd., Blackburn, Lancs., England, will talk on Dryer Felts at the June 14th, division meeting on "Tissue and Fine Papers" at the National Meeting of the Superintendents Association at the Lake Placid (N.Y.) Club. Dr. Race is making the trip from England especially to fill this assignment.

Lake States Timber Resources to Keynote Supts. Meeting

The Northwestern Division of The American Pulp and Paper Mill Superintendents Assn. will hold a Regional Meeting on May 17 in Rhinelander, Wis. There will be a mill visit to the plant of the Rhinelander Paper Co.; and a dinner meeting at Hotel Fenlon. The mill visit is scheduled to start at 3:30 P.M.

WEBSTER CONVEYORS!
FOR 77 YEARS!!
ENGINEERED—FABRICATED—INSTALLED
WRITE FOR CATALOGS
WEBSTER MFG., INC.
TIFFIN, OHIO
OFFICES:—BUFFALO—CHICAGO
CINCINNATI—CLEVELAND—DETROIT
NEW YORK—PHILADELPHIA—PITTSBURGH
CHICAGO ADDRESS:—343 S. DEARBORN ST.
CHICAGO 4, ILLINOIS

It will speed the reply to your inquiry to mention Paper Trade Journal.



That the breadwrap may be a better breadwinner

The press that prints the wrap does much to win the bread sales.

And there is only one way this company can be sure that a press will do the clean printing job that Kidder Presses have a reputation for producing. It is a thorough test of the expertly designed Kidder Press.

Here you see an eight-color letterpress on the erecting floor. The important hydraulic lines are being assembled by workmen specially skilled in the work. So it is with every part and device on the press.

It is then completely disassembled, carefully packed for shipment and is later assembled by a qualified Kidder erector.

This is the best protection in the world of printing for the Kidder customer and the Kidder Press reputation.

Kidder

Letterpress, Flexoprinter® and Gravure Presses, Slitters and Rewinders

KIDDER PRESS CO., INC., DOVER, NEW HAMPSHIRE

PRICES OF FIBERS

MARKET WOOD PULP

SECOND QUARTER CONTRACT PRICES PER SHORT AIR-DRY TON

	Delivered Basis		Varying Freight Allowances†		
	U.S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$82.50/ 90.00	$82.50/ 90.00	$$83.00/ 86.00§	$90.00/ —	$$77.50/ 90.00
Kraft, Blchd.	152.00/155.00	155.00/ —	$155.00/ —		$155.00/ —
Kraft, Blchd. Hdwd.	150.00/ —		$137.50/ —		
Kraft, Semi-bleached	140.00/145.00	135.00/140.00	$137.50/140.00§	*140.00/ —	
Kraft, Unbl.	117.50/125.00	120.00/130.00	†125.00/130.00	125.00/145.00	
Sulphite, Blchd.	150.00/ —	150.00/ —	*150.00/ —	*150.00/ —	145.00/147.50†
Sulphite, Unblchd.	130.00/ —	130.00/ —	†130.50/ —	*130.00/ —	
Sulphite, Unb'l. Gl'sn		129.00/ —	†129.00/ —		
Soda, Blchd.	142.50/145.00	145.00/ —			

‡ F.o.b. Shipping Point. § On Dock Atlantic Ports. * Freight allowed.

NEW YORK RAG MARKET

New Domestic Cotton Cuttings

Delivered Mill Basis
PRICES NOMINAL

	Per 100 lbs.
No. 1 White Shirts	$15.25/$15.50
No. 1 Unblchd. Muslins	17.00/ 17.75
Blchd. & Unblchd. Underwears	17.00/ 18.00
No. 1 Light Silesias	7.25/ 7.75
No. 1 Light Blue Overalls	9.00/ 9.50
Percales	7.00/ 7.50
No. 1 Light Prints	5.75/ 6.25
Suntan Khakis	6.00/ 6.50
Cottonades	3.50/ 4.00
No. 1 Washables	3.00/ 3.50

Old Domestic Cotton Rags

(Prices to Dealers, F.o.b. Ship. Pt.)

	Per 100 lbs.
Mixed White	$3.00/$3.50
Cotton Pants & Overalls	2.25/ 2.50
Thirds and Blues, Repacked	1.75/ 2.00
No. 2 Roofing	26.00/ 27.00

COTTON LINTERS

Memphis Market

F.o.b. Oilmills

	April 17 Per 100 lbs.
Grade 1	n.a.
2	$9.10/ $7.70
3 1st cut—felting	7.00/ 5.80
4	5.25/ 4.20
5	3.75/ 3.05
6	3.00/ 2.75
7	2.75/ —

*Based on 73% cellulose.

Bagging

(Prices to Dealers, F.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny	$5.00/$5.25
Foreign Scrap Burlap	5.00/ 5.25
Heavy Wool Tares	6.50/ —
Foreign Manila Rope	6.50/ 6.75
Domestic Manila Rope	7.75/ 8.25
Domestic No. 1 Sisal Strings	4.25/ 4.50

WASTE PAPER MARKET

Mill Prices, f.o.b. Trucks Shipping Point - Includes Brokerage

These quotations are a partial indication of the price range on volume tonnage in each market on the date specified, as gathered from major dealers. SPECIAL PACKINGS AND SPOT TONNAGE NOT INCLUDED. Prices nominal.

	New York	Boston	Chicago	Los Angeles
	April 23	April 23	April 23	April 23
No. 1 Mixed Paper	— / 14.00	— / 16.00	17.00/ —	14.00/ —
No. 1 News	19.00/ —	21.00/ —	18.00/ —	14.00/ —
Overissue News	26.00/ 29.00	21.00/ 25.00	23.00/ —	14.00/ —
Mill Wrappers	25.00/ —	21.00/ —	20.00/ —	14.00/ —
Old Corrugated Containers	27.00/ —	26.00/ 27.00	30.00/ —	19.00/ —
Super Resorted Kraft Paper	40.00/ 50.00	45.00/ 50.00	45.00/ —	45.00/ —
New Double Kr. Ld. Corr. Cuts	40.00/ 42.00	45.00/ 47.00	45.00/ —	35.00/ 40.00
(Semi-chem. medium)	45.00/ 52.50	47.50/ 52.50	50.00/ —	— / —
New 100% Kraft Corr. Cuts	55.00/ 65.00	55.00/ 65.00	75.00/ —	45.00/ —
New Br. Kraft. Env. Cuts	90.00/105.00	85.00/ 95.00	80.00/ —	60.00/ —
New Br. Kr. Bag Waste Prntd.	65.00/ 75.00	65.00/ 75.00	70.00/ —	60.00/ —
New Br. Kr. Bag Waste Unprntd	75.00/ 80.00	80.00/ 90.00	85.00/ —	— / —
No. 1 Groundwood Shvs.	45.00/ 50.00	35.00/ 45.00	40.00/ —	27.00/ 30.00
White Newsblanks	80.00/ 82.50	70.00/ 80.00	60.00/ —	65.00/ —
No. 1 Soft White Shvs.	90.00/ 95.00	80.00/ 85.00	80.00/ —	— / —
Hd. Whit. Shvs.	115.00/120.00	110.00/120.00	120.00/ —	105.00/ —
Hd. Wht. Env. Cuts	130.00/135.00	130.00/140.00	120.00/ —	120.00/ —
Col. Tab. Cards	75.00/ 80.00	75.00/ 77.00	65.00/ —	42.50/ —
Manila Tab. Cards, bales	100.00/110.00	95.00/102.00	95.00/ —	74.00/ —
No. 1 Col. Ledger	35.00/ 40.00	40.00/ 45.00	50.00/ —	32.50/ —
White Ledger	75.00/ 80.00	70.00/ 75.00	70.00/ —	50.00/ —
Mixed Book & Mag.†	28.00/ 29.00	30.00/ 32.00	25.50/ —	— / —
No. 1 Rep'd. Hvy. Books‡	33.00/ 35.00	33.00/ 35.00	37.50/ —	— / —

† Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% of groundwood. § Deld.

PRICES OF MATERIALS

Aluminum sulphate:		
cml bags, c.l. wks.	cwt.	$1.85 / —
iron-free, c.l. wks.	cwt.	3.55 / —
Casein, acid prec.:		
dom. sh. pt. c.l. (30 mesh)		30.00 /32.00
Arg. ex. dock, duty paid		21.50 /22.00
New Zeal., do.		26.00 /27.00
Caustic soda:		
c.l. wks. solid, 76%	cwt.	4.10 / —
flak. & grd. 400-lb. drums, c.l.		4.50 / —
liquid 50% tanks		2.80 / —
liquid 70% tanks		2.90 / —
China clay:		
dom. air-float, c.l. (Geo. Wks.)	ton	10.00
water-washed, lump, filler,	ton	11.00
coating	ton	17.60 /40.00
Imported, ex. ship.	short tons	20.00 /35.00
Chlorine:		
single-unit tanks, works.	cwt.	3.05 / —
multiple unit, 2-5 cars per yr.		3.92 / 5.12
Formaldehyde:		
USP, inh. dms. c.l. wks.	lbs.	.0675/ —
lcl., E. wks.	lb.	.072 /.0725
Lime:		
hydrated (bulk, c.l.)	tons	18.71 /20.21
Gum rosin:		
K, M, N, drums, c.l. Savan,	cwt.	8.26 / 8.45
Rosin size:		
70%, gum & pale grds., tank cars, south, sh. pt.	cwt.	7.24 / 7.28
Salt cake:		
dom. bulk, 100% anh. wks.	ton	28.00 / —
imp. f.o.b. Saskatchewan		18.00 / Cana. funds
Soda ash:		
light, 58%, bags, wks.	cwt.	1.80 / —
bulk	cwt.	1.50 / —
Sodium silicate, 40° Be.:		
tank-cars, wks.	cwt.	1.10 / —
drums, c.l. wks.	cwt.	1.45 / —
(47°) Be. WW.		
tank-cars, wks.	cwt.	1.75 / —
drums, c.l. wks.	cwt.	2.10 / —
Sodium peroxide:		
dms. c.l. E. of Miss.	lb.	.186
l.c.l. (same basis)	lb.	.191 / .196
Soybean, protein:		
chem. isol., wks. c.l. bags	lb.	.23 / —
Sulphuric acid:		
60° Be. cbys. c.l. wks.	cwt.	2.00 / —
l.c.l. wks.	cwt.	2.45 / —
tank-cars, wks.	ton	18.60 / —
Sulphur:		
crude, c.l. mines, contract,	long ton	26.50 / —
f.o.b. vessels Gulf	do.	28.00 /31.00
Sulphur dioxide:		
liquid, coml. cyl., wks.	lb.	.10 / .12
multi-unit cars, wks.	lb.	.0535/
Starches:		
corn, multiwalls, c.l. prod. plant:		
pearl	cwt.	6.39 / —
white, dextrins	cwt.	7.55 / 7.80
chlorinated	cwt.	8.15 / —
potato, Idaho, c.l. wks.	cwt.	6.00 / —
East, fr. all. 50 cents	cwt.	
potato, Maine, f.o.b. wks.	cwt.	5.75 / —
Talc:		
domestic, sacks, (fibrous, grd.) c.l. wks., N.Y.	ton	27.00 /37.00
Titanium dioxide:		
anstase, c.l. deld. E. bags.	lb.	.22½/ —
l.c.l. deld.	lb.	.23½/ —
rutile, c.l. deld.	lb.	.26½/ —
l.c.l. deld.	lb.	.27½/ —

If you make papers where appearance counts—wallpaper, publication stock, wrappers, cartons—TITANOX white titanium dioxide pigments are for you.

To reduce show-through, the use of TITANOX is imperative. To afford contrast—TITANOX. To increase visibility and legibility—again TITANOX. No matter what its purpose, paper pigmented with TITANOX is better-looking paper. Titanium Pigment Corporation, 111 Broadway, New York 6, N. Y.; Atlanta 5; Boston 6; Chicago 3; Cleveland 15; Houston 2; Los Angeles 22; Philadelphia 3; Pittsburgh 12; Portland 14, Ore.; San Francisco 7. In Canada: Canadian Titanium Pigments Limited, Montreal 2; Toronto 1.

Titanium Pigment Corporation is a subsidiary of National Lead Company

look...

it's

TITANOX®

Formica Co. Acquired By American Cyanamid Co.

American Cyanamid Co. has completed acquisition of the Formica Co., Cincinnati, Ohio. A new Cyanamid subsidiary, Formica Corp., has been formed to operate under the present Formica management.

The Formica subsidiary becomes the 10th operating unit of Cyanamid. It produces plastic laminates of impregnated kraft paper and other materials, for use as countertops, furniture, cabinets, tables and wall surfaces. Sales last year were $36,471,588, with earnings of $3,123,740.

Publishers Assn. Report Improvements In Box Cars

At last week's annual meeting of the American Newspaper Publishers Assn. in New York, a committee of the Association reported that its efforts to have railroads build all-purpose box cars with cushion underframes and draft gears to insure better newsprint handling, were bearing fruit. Southern Railway, serving Calhoun, Tenn. (Bowaters Southern), has equipped 200 new cars with cushion underframes. Southern Pacific follows suit.

CHAS. T. MAIN, INC.
CONSULTING ENGINEERS
Process Studies, Design, Specifications and Engineering Supervision
PULP AND PAPER MILLS
Steam, Hydraulic and Electrical Engineering
Reports, Consultation and Valuations
80 Federal Street Boston 10, Mass.

THE RUST ENGINEERING CO.
PITTSBURGH 19, PA. • BIRMINGHAM 3, ALA.
Offices in Principal U.S. and Canadian Cities
Engineers Constructors
Complete Service for PULP and PAPER MILLS including all auxiliaries and byproducts.
Surveys • Reports • Design
Construction • Modernization

Galante Makes Newsprint At Warrensburg Mill

Paper production has been diverted to some tonnage in newsprint at the Warrensburg, N.Y. mill of Thomas A. Galante & Sons Inc. Head office of the firm is at the Mechanicville, N.Y. mill which is being readied for start-up later this year of a high speed tissue machine.

More than 400 tons of newsprint have been produced lately on the 91-inch fourdrinier at Warrensburg.

Key Men of Watervliet Meet Hammermill Heads

About 35 key personnel of Watervliet (Watervliet, Mich.) Paper Co. recently attended a get-acquainted dinner with a number of the top Hammermill Paper Co. executives from Erie, Pa.

Heading the Hammermill delegation was D. S. Leslie, president and general manager of the Erie, Pa., corporation, which has recently absorbed the Watervliet company through a stock exchange merger.

Eastern Corp. Plans Financing for Expansion

Eastern Corp., has filed a registration statement with the Securities and Exchange Commission for $4,090,200 of convertible subordinated debentures due May 15, 1981. The Maine paper company reports it will use the proceeds of the debenture issue together with proceeds from the sale of $10 million of senior notes to institutions, to repay $3.2 million of outstanding loans, to construct the new, recently announced, $10 million Kraft pulp mill and to acquire an 80 per cent interest in the recently organized Ascot Chemical & Adhesives Corp. for $1 million.

Ascot Chemical, as reported earlier, was organized under an agreement between Eastern and Adhesives Tapes, Ltd. of Borehamwood, England.

D. Samuel Gottesman Dies

D. Samuel Gottesman died at New York Hospital on Saturday April 21, after a brief illness. He was 70 years old. Mr. Gottesman was president and director of Gottesman & Co., Inc.; Central National Corp.; and Gottesman & Co. Aktiebolag, Stockholm, Sweden; and director of Eastern Corp. and Rayonier.

For over 50 years, Mr. Gottesman was closely associated with the world pulp and paper industry, and for many years has been recognized both here and abroad as one of the foremost leaders in this field.

Mr. Gottesman was also active for several decades in the investment banking field both here and abroad. 30 years ago he was an organizer of Central National Bank of the City of New York, and became its chairman of the board.

Under the auspices of a Foundation that he established, and which bears his name and that of his late wife Regina—the D. S. and R. H. Gottesman Foundation—he provided scholarships in many universities, including the University of Maine, Institute of Paper Chemistry, M. I. T. and McGill University.

In recognition of Sweden's humane help to victims of Nazi persecution of all faiths and nationalities, Mr. Gottesman established a Chair of the Humanities at the University of Upsala. He was awarded the Royal Order of the North Star, Knight First Class, by the late King Gustaf V of Sweden.

ENGLISH ECCO CLAYS CLAYS
ECCO CLAYS TRADE MARK
UNIFORM SUPERIOR DEPENDABLE
English China Clays Sales Corporation
551 Fifth Avenue, New York City

Future of Groundwood Manufacture

A symposium by four experts covering all phases of mechanical pulp production.

(Continued from page 24)

medium densities with perhaps a combination of peroxide and hypochlorite.

Where We Go Tomorrow

Lee E. Eberhardt of Bauer Brothers pointed his subject of "New Methods of ducing groundwood from chips. The sysadvantages of the Bauer system of producing groundwood from chips. The system, which has been described in detail in *Paper Trade JOURNAL*, Sept. 15, 1955 and February 20, 1956, utilizes Bauer disc refiners, Bauer cleaners, and varying combinations of the Bauer Pressafiner and Rapid-Cycle digester.

Equal or superior quality groundwood can be produced at lower cost from a much wider range of wood species than were formerly acceptable. Ahead of defibering in the refiners, the chips of certain species are first lightly impregnated

DR. W. W. GALLAY, Research Director, E. B. Eddy Co., Hull, Que., Canada who was the very provocative after dinner speaker.

with cold soda or neutral sulphite solutions.

Of particular interest to this northern meeting was the data offered by Mr. Eberhardt on pulps that the Bauer system has produced from northeastern hardwood chips, including such species as birch, maple, and beech.

Vision of Things to Come

A hardheaded, yet highly imaginative outlook on groundwood research was revealed by Dr. Gallay at the dinner meeting. He reprimanded the shortsightedness of many engaged in groundwood research, who waste time trying to improve existing procedures instead of searching for new ones. Some of the ideas that flashed from the speaker startled the audience: classification of fiber diameters may be more important than fiber lengths; more knowledge is needed of fines, which are not homogeneous; present concepts of bonding are unproven and our present methods of attaining bonding may be pointed in the wrong direction; fiber swelling is more desirable than fibrilation; "hydration" is a misused word.

It must be acknowledged that Dr. Gallay provoked considerable mental activity among his listeners.

Contributing to the success of the meeting besides the speakers and the district chairman were the following committeemen: Vincent Long (American Wood Board), Edward Lawson (Finch, Pruyn & Co.), Grant Cole (Finch, Pruyn), Thomas McGreen (International Paper Co.), Clyde Davis Jr. (Finch, Pruyn).

Semtile Chip Silos, each 30 ft. I.D. by 78 ft. 2 in. high, Rayonier, Inc., plant, Jesup, Georgia.

Tile Silos

for Storage of Dry Materials

These enormous chip silos, engineered and erected by Stebbins, are steel-reinforced concrete faced inside and outside with vitrified tile. No concrete forms were required—a Stebbins construction method that results in substantial savings.

If you require facilities for storing materials—dry or wet—in large or small quantities—it will pay you to get Stebbins' recommendation. Or if you need corrosion-resistant process vessels, Stebbins' unequalled experience and facilities for the application of linings and the construction of tile can be extremely valuable to you.

Write for Bulletin A-153

SEMCO

STEBBINS

Engineering and Manufacturing Company, Watertown, N. Y.

STEBBINS ENGINEERING CORP. — 1504 TOWER BLDG., SEATTLE, WASH.

CANADIAN STEBBINS ENGR. & MFG. CO., LTD. — CASTLE BLDG., MONTREAL, CANADA

SINCE 1884

Specialists in Design, Installation and Servicing of Linings and Tile Tanks

NEWS OF SUPPLIERS

• BORDEN CO. has announced plans to build a new formaldehyde and synthetic resin plant in Fayetteville, N. C.

Scheduled for completion late in 1956, the plant will be geared to produce 36 million pounds of formaldehyde a year. Added to the output of Borden's present four formaldehyde plants, the total production, it is said, will equal 12 per cent of total domestic consumption.

D. W. Martin

S. R. Lyle

• TIMKEN ROLLER BEARING CO.'s Steel and Tube Division, has appointed Sherman R. Lyle to district manager of the division's offices in Cleveland, effective April 15. He replaces R. P. Donnell who becomes district manager of the Steel and Tube Division's New York City territory. Starting with the Timken in 1940 as a metallurgist, Mr. Lyle was appointed to the sales division in 1946. He was appointed district manager in the Timken company's Buffalo office in 1951 where he has remained until his recent appointment.

• AMERICAN HOIST & DERRICK CO., St. Paul, Minn., has introduced a new Sales Development Department. Don W. Martin, formerly assistant advertising and sales development manager, Schield Bantam Co., Waverly, Iowa, will spearhead the new program.

• CAMERON & BARKLEY CO., Southeastern distributor of industrial supplies, with branches at Charleston, S. C., Savannah, Ga., Jacksonville, Orlando, Tampa and Miami, Fla., has become an authorized distributor for Grinnell-Saunders Diaphragm Valves. C & B is already carrying the Grinnell line of pipe hangers and supports.

• COLUMBIA-SOUTHERN CHEMICAL CORP. at the dedication of its new multimillion dollar research and development center at Natrium, W. Va., disclosed a new program to stimulate local high school science teachers in acquiring advanced education in their fields.

The program will make available summer fellowships toward advanced degrees for the teachers of chemistry, physics and mathematics at Magnolia High School in New Martinsville, W. Va.

Each award will amount to $500 plus tuition at an accredited institution of the teacher's own choosing. To give candidates who start this program an opportunity to complete requirements for their masters' degrees, this same award will be made for three successive summer terms if that much time is required for the candidate to finish his work.

• UNION ASBESTOS & RUBBER CO. has promoted John F. Corcoran to general manager of the Equipment Steel Products, Equipment Specialties, Coldmobile and Hand Brake divisions. Emil T. Johnson has been named general manager of the Fibrous Products division.

• FAIRBANKS, MORSE & CO., Chicago, has appointed L. A. Weom, who has for the past several years been manager of Materials and Schedules at the Beloit, Wis., Works, manager of the Pump Sales Division with headquarters at Kansas City, Kansas. Mr. Weom succeeds the late Tom E. Woodruff.

J. R. Walsh, who has been manager of the company's Kansas City, Kansas Pump Works since its opening several years ago, is succeeding Mr. Weom at the Beloit Works as manager of Materials and Schedules.

G. R. Anderson, who has for many years been manager of the company's Electrical Works at Freeport, Ill., succeeds Mr. Walsh as manager of the Kansas City Works.

A. H. Hoffman, who has for a number of years been manager of the company's Westco Pump Works in St. Louis, Mo., has been appointed manager of the Freeport Works succeeding Mr. Anderson.

V. E. Johnson has been transferred from the Sales Division to the Manufacturing Division, and has been appointed manager of the Westco Works in St. Louis succeeding Mr. Hoffman.

• CANADIAN TITANIUM PIGMENTS LIMITED, a subsidiary of National Lead Co. will build, at a cost of $15 million, Canada's first titanium pigment plant, at Varennes, Quebec, about fifteen miles northeast of Montreal. The entire output of titanium pigment will go to Canadian industry.

PAYROLL PRESSURE?

try COST ACCOUNTING your COUNTING COSTS

Then see how you can cut them 3 to 5 cents a ream with Stevens Automatic Sheet Counters and Pile Markers—Write for Bulletin No. 100—Or ask for a free demonstration in your mill.

stevens

CHARLES R. STEVENS, INC.
2017 SYLVANIA AVENUE
TOLEDO 13, OHIO

Alvin H. Johnson & Co.

INCORPORATED

Consulting and Designing Paper Mill Engineers

415 LEXINGTON AVENUE NEW YORK 17, N. Y.

PAPER MILL DESIGN PROCESS ENGINEERING POWER PLANTS

STRUCTURAL AND ARCHITECTURAL DESIGN

REPORTS APPRAISALS ESTIMATES AND SURVEYS

W. T. Butler

R. J. Casey

• BAUER BROS. CO., Springfield, Ohio, has announced that W. T. Butler has joined the firm as vice-president and general manager of Bauer's Canadian Plant in Brantford, Ont.

He was formerly the administrative assistant to the director of research at Abitibi Power & Paper Co., Sault Ste. Marie, Ont. Here he was directly involved in Abitibi's pioneer program development of high yield sulphite pulping.

Prior to his three years in research, he was control superintendent in the Sault Mill Division. Before going with Abitibi, he worked three years at Howard Smith, Beauharnois, as chief chemist.

• J. M. HUBER CORP. has appointed Robert J. Casey as divisional manager of Paper Clays Division, Industrial Products Department. Mr. Casey will be in charge of sales of coating and filler clays and other coating pigments to paper mills throughout the United States and Canada. His assistant divisional managers will be A. L. Fuller and C. A. Raby.

Mr. Casey has been with J. M. Huber since 1950 as a technical sales representative and assistant divisional manager. Prior to that he was employed by American Coating Mills and Hercules Powder Co. in various technical capacities.

• FARREL-BIRMINGHAM CO., INC., Ansonia, Conn., on May 1 will move its Chicago office to new and larger quarters at 10725 South Western Ave., phone PRescott 9-3421.

Figures of the Week

PAPER PRODUCTION RATIO REPORT —American Paper & Pulp Ass'n. Figures

(Production as percent of normal capacity)

COMPARATIVE WEEKLY SUMMARIES

1956	Mar. 17 103.9	Mar. 24 103.9	Mar. 31 101.5	Apr. 7 98.8r	Apr. 14 103.5
1955	Mar. 19 97.6	Mar. 26 97.6	Apr. 2 98.1	Apr. 9 97.2	Apr. 16 97.1

r Revised.

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1955	93.6	96.6	97.9	98.0	99.3	97.4	85.5	96.2	93.8	101.2	100.6	94.0	94.9
1956	98.9‡	101.5‡	102.6‡										

‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1949	1950	1951	1952	1953	1954	1955	1956
Year to Date	86.7	95.1	101.3	96.6	94.9	94.1	95.4	101.1
Year Average	83.7	95.8	98.0	88.6	92.3	91.6	94.9	

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

Note: In the above tables all the ratios shown are on the basis of a normal 6 and 7 day capacity.

PAPERBOARD OPERATING RATIOS†

COMPARATIVE WEEKLY SUMMARIES

1956	Mar. 17 99	Mar. 24 98	Mar. 31 101	Apr. 7 94	Apr. 14 100
1955	Mar. 19 97	Mar. 26 95	Apr. 2 95	Apr. 9 95	Apr. 16 92

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec	Year Avg
1955	92	95	96	94	97	97	84	99	97	102	101	92	96
1956	100	100	99										

† *Percents of operation based on "Inch-Hours" reported on a 6-day basis to the National Paperboard Association.*

SUMMARY OF PAPERBOARD STATISTICS—National Paperboard Ass'n. Figures

ITEM	THIS WEEK ENDING Apr. 14, 1956	LAST WEEK ENDING Apr. 7, 1956	CUMULATIVE TO DATE Jan. 1, 1956 to Apr. 14, 1956
% Activity	100%	94%	100%
	Tons	*Tons*	*Tons*
Total Production	285,493	276,703	4,234,570
Liner	97,392	98,709	1,434,362
Corrugating Material	42,888	40,290	667,925
Chip & Filler Board	6,446	4,905	91,163
Total Containerboard	146,726	143,904	2,193,450
Folding	52,635	49,907	766,764
Set-Up	13,511	12,271	195,045
Special Food Board	22,301	26,633	340,635
Other	50,520	43,988	738,676
Total Boxboard	138,767	132,799	2,041,120
Total Orders	*Tons*	*Tons*	
Received	247,625	380,425	
Unfilled At End of Week	602,710	647,160	

Supplying Your Requirements

YOUR PAPER WASTE BECOMES PROFIT WHEN IT IS RECLAIMED.

DO YOU SUPPORT THE MILLS WHICH MAKE THIS DISPOSAL POSSIBLE?

WASHINGTON, D. C.
CAMDEN, N. J.
NEW YORK, N. Y.
MINNEAPOLIS, MINN.

THOMAS PAPER STOCK COMPANY
1500 No. Hooker Street • Chicago 22, Ill.

NEW SAVINGS FOR YOU...

through in-place cleaning of

- **SUCTION PRESS ROLLS**
- **WHITE WATER HEATERS**
- **VATS**
- **CYLINDERS**
- **THICKENER SCREENS**

with new double-duty material

OAKITE COMPOUND No. 85

Here's a new, specialized cleaner for pulp and paper mills... Oakite Compound No. 85. It simplifies cleaning procedures, saves work, reduces down-time.

By combining both acidic and solvent properties in one cleaner, Oakite Compound No. 85 by itself removes *all* the different types of soil commonly encountered on mill equipment—asphalt, pitch, wax, alum, size, lint, pulp fibers, as well as lime scale and certain oxides. Too much to expect from a single cleaner? Oakite Composition No. 85 does it—and does it right.

Look at these additional advantages.

- **Works fast. Quick penetration and wetting-out action saves cleaning time.**
- **Long solution life.**
- **Free-rinsing.**
- **No offensive odor.**
- **Safer, more effective than raw acids.**

Find out how Oakite Compound No. 85 can simplify your cleaning operations and cut costs at the same time. Call your local Oakite Technical Service Representative, or write for free booklet on paper industry cleaning to Oakite Products, Inc., 48A Rector Street, New York 6, N. Y.

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS · METHODS · SERVICE
SCIENCE

Export Division Cable Address: Oakite

Technical Service Representatives in Principal Cities of U. S. and Canada

Westvaco Quality Papers

Westvaco manufactures a wide range of high quality paper products — from fine printing to rugged converting papers. All of these papers are made from virgin chemical pulps to precise standards of uniformity and quality — Westvaco's guarantee of top performance.

Printing Papers . . . Coated and uncoated letterpress, coated and uncoated offset, and gravure.

Writings . . . Bond, mimeo, duplicating, ledger.

Bristols . . . Index, post card.

Converting Papers . . . Label, tablet, envelope, lining, file folder, tag, tabulating card, coating raw stock.

Bleached Boards . . . Cup, milk bottle, folding boxboard, frozen food container.

Kraft Papers . . . Bag, multiwall sack, envelope, asphalting, impregnating, waxing.

Containerboard . . . Linerboard and corrugating medium.

Market Pulp . . . Bleached and unbleached sulphate.

West Virginia Pulp and Paper Company
230 Park Avenue, New York 17, N. Y.
35 East Wacker Dr., Chicago 1, Ill. • 503 Market St., San Francisco 5, Cal.

GROUNDWOOD PULP

CANADIAN NEWSGRADE

PAPER CORPORATION *of* UNITED STATES
ROCKEFELLER CENTER
630 FIFTH AVENUE
NEW YORK
CIRCLE 7-1637

WEYERHAEUSER

BLEACHED SULPHITE
KRAFT CONTAINER BOARD

BLEACHED SULPHATE
BLEACHED KRAFT PAPERBOARD

Help Wanted

CONFIDENTIAL EMPLOYMENT SERVICE

We will welcome an opportunity to be of service, if you are available for a position in paper or pulp manufacturing or paper converting. SEND US YOUR RESUME. Many attractive positions at excellent salaries are open for top-notch men. No fee to be paid unless you accept employment through us. Negotiations are confidential.

CHARLES P. RAYMOND SERVICE, Inc.
Liberty 2-6547 A-30
294 Washington St. Boston 8, Mass.

WANTED
Tour Foremen and Machine Tenders

We want men with heavy background and experience in the operation of high speed dry crepe tissue machines. We offer:

1) An opportunity to join one of the leading and most progressive paper manufacturers in the country.
2) A position with unlimited potential —definite security.
3) Excellent living and working conditions—our new mill is located in central Florida, midway between Jacksonville and Daytona Beach.
4) A retirement plan to which all funds are contributed by the company.
5) Many benefits — i.e., Group Life Insurance, Hospitalization and Surgical Insurance, etc.

Send resume to Hudson Pulp & Paper Corp., Southern Division, Palatka, Florida, Attn: Personnel Div. A-30

Help Wanted

Supervisor of Application Research

Growing company supplying raw materials to the paper industry has responsible position for above-average chemist or chemical engineer to work in new modern research center located 25 miles from New York City in attractive New Jersey setting. Knowledge of coated paper manufacturing required, with machine coating background especially helpful. Age 28-37. Good salary and benefits with excellent opportunity for advancement. Write or phone our Personnel Department.

MINERALS & CHEMICALS CORPORATION OF AMERICA
Menlo Park, New Jersey
Tel.—Liberty 8-2200 M-14

PLANT MECHANICAL ENGINEER

Excellent opportunity for young man interested in progressive medium size integrated paper mill, box converting Company, located in midwest. Should have some machine design background. Engineering degree or equivalent background required.

Send detailed resume' to Box #56-137, care Paper Trade Journal. A-30

WANTED—Manager for asphalt laminating plant. Practical man, not over 35, with knowledge of sales. Wonderful opportunity with established company. Address Box 56-143 care Paper Trade Journal. M-14

Help Wanted

PLANT ENGINEER

Tired of the cold and snow? Want to enjoy life by getting all the benefits by living in Miami, Fla., housing arranged for you and your family, plus a well paying job and bonus?

The man we need must have a thorough knowledge of plant maintenance, boilers, turbines and diesels; supervise a crew of ten men, yet be versatile enough to adapt himself to the operation of a medium size one machine folding board mill. All replies held confidential. Box 56-130 care Paper Trade Journal.

A-30

INDUSTRIAL ENGINEER

Pulp and Paper Mill desires to locate a young aggressive Industrial Engineer to do methods and process studies. Also some job evaluation and time studies in connection with a long established and accepted plan. Excellent opportunity. Send resume and expected salary to Box 56-78 c/o Paper Trade Journal. A-30

CHEMISTS—CHEMICAL ENGINEERS

Enlarged Technical Department of an expanding Pulp and Paper Mill requires Chemists and Chemical Engineers to meet the demands of expansion. Excellent opportunity, salary and fringe benefits. Send resume and expected salary to Box 56-77 c/o Paper Trade Journal. A-30

WANTED—Thoroughly experienced mechanical engineer for board mill on chipboard and newsboard. Permanent position and complete charge in modernizing mill. Write, giving complete experience, background and salary expected. Address Box 56-115 care Paper Trade Journal. A-30

OPPORTUNITIES FOR ENGINEERS-DRAFTSMEN

Mechanical... Civil... Electrical... Chemical

To join the technical sales and engineering staff of

THE BLACK-CLAWSON COMPANY

Technical personnel, with a knowledge of the paper industry and experience in pulp, paper or converting engineering, are sought by The Black-Clawson Company; one of the world's leading manufacturers of pulp, paper-making and converting machinery.

Six divisions of Black-Clawson serve the world's paper industry from plants in the United States, Canada and Great Britain.

Salary commensurate with background, experience and ability. Complete insurance, profit-sharing, advancement and vacation program.

Please direct replies to:

Mr. R. F. Vokes, Vice-President

THE BLACK-CLAWSON COMPANY

250 PARK AVE. NEW YORK 17, N.Y. A-30

Help Wanted

MECHANICAL ENGINEER

Expanding Pulp and Paper Mill requires a Mechanical Engineer to understudy present Maintenance Supt. Excellent opportunity for advancement and personal development. Good salary and fringe benefits. Send resume and expected salary to Box 56-76 c/o Paper Trade Journal. A-30

WANTED

Paper chemist for product development of chemicals for pulp and paper industries. 2-5 years experience in these fields necessary. Outstanding growth potential in newly formed Product Development Department of the ATLAS POWDER COMPANY located in Wilmington, Delaware. Direct all replies to: R. L. Herrman, marked personal. All responses held confidential. A-30

Personnel Service Associates
115 State St., Springfield 3, Mass.
Tel. RE 6-4749

Attractive positions for Administrative, Technical, Production and Sales executives and personnel in Manufacturing, Conversion and Distribution.
Personalized Services. Confidential
A-30

CHEMIST or CHEMICAL ENGINEER

Degree required. Position for development work in large paperboard mill. Previous experience in paper industry helpful but not necessary. National Company. Good starting salary. Write or apply, Personnel Office—Robert Gair Company, Inc., Uncasville, Connecticut. M-7

WANTED
MECHANICAL ENGINEER

Particularly qualified for surveys and report preparation covering industrial power plants and steam and power uses in paper mills, salt plants and industries with similar uses.
Pension plan; group insurance and other benefits; good salary; growing company.
Address Box 56-117 care Paper Trade Journal. A-30

ADJUSTER

Experienced Bag adjuster on Weber and Potdevin Self Opening Machines. Plant located in N. Y. Metropolitan area. Permanent position. Replies will be kept confidential. Address Box 56-138 care of Paper Trade Journal. M-7

Chemist for research and development of by-products from sulphite spent liquor and in the use of resins and polymers in paper and protective coatings on paper. Background of organic chemistry and applications of organic materials is essential. Experience in uses with paper is desirable.

Include resume and personal data in reply to R. C. Crain, Research Director, Rhinelander Paper Company, Rhinelander, Wisconsin. M-7

WANTED

Assistant Finishing Superintendent and Finishing Room Foreman for New England mill operation. Experienced aggressive men to finish quality fine papers. Salary commensurate with experience and ability. Reply Box 56-135. M-14

CORE & TUBE MFG. CONSULTANT

Wanted—Tube and Core Mfg. operator familiar with operational problems and cost, to act as consultant. Box 56-142, Paper Trade Journal. M-7

FOR SALE

PRINTING PRESSES

1—52" Wide 4 Color Manton Oil Ink Press.
1—42" 4-color Kidder Std Anilliner
3—Flexo 1-rotogravure
1—40" 4-color Hudson-Sharp Flexographic, with Variable Sheeter.
1—36" x 488" 4-color Schmutz
1—36" 2-Color Manhassett. Roll to Roll with Slitting Attachment.
1—30" 4-color Paper Converting Machine Co.'s Roll to Roll Oil Ink Press.
1—26" 3-Color Potdevin Flexo Tailprinter
1—22" 2 Color Potdevin Roll to Roll Flexographic Tailprinter.
1—20" Wolverine Flexographic Cub Printer, roll to roll, practically new.
3—15" 1-color roll to roll Flexographic presses
3—Chambon oil ink presses 1—13" 4-color, 1—18" & 1—28" 3-color

POWER PAPER CUTTERS

20—Seybolds 1—56" Precision; 56" & 84" 12Z; 40", 44", 50", 57", 64", 74" 10Z; 50", 56", 64", 84" Daytons; 44" & 74" 20th Century; 34", 44" & 75" Holyokes; 36" 2Y; 3 Oswegos, 44", 57" & 68"; 3 Sheridans, 36", 40" & 65"; 1 3VA Seybold 3 Knife Trimmer

CAMACHINES

1—162" Type 19.
1—62" Type 10-84.
1—62" Type 40 1AF.
1—62" Type 26-7AM.
1—52" Type 10-6.
1—50" Type 6
1—42" Type 9-5-A.
1—42" & 62" Type 6.
1—42" Type 10-5A, 30" rewind.
1—42" & 1—52" Type 24-2A.
1—42" Type 40-5D (Roll Doctor).
1—40" Type 40.

OTHER SLITTERS

1—84" Waldron Double-Drum, Shear-Cut, 50" Max. Rewind.
1—62" Johnston model 12 score cut—VS drive
1—60" Langston Type "B" 50" rewind
1—48" Inman.
1—40" Type "A" Langston Shear-Cut.
1—36" & 1—40" Kidder SL Model.
1—30" & 1—40" Beck Razor Blad Slitter.
1—40" Kidder SH Model—40" rewind.
1—50" Meisel Series O-P Shear-cut.

MISCELLANEOUS MACHINES

1—Roto Bag Machine Model "C" with electric eye
1—Complete ½ bbl. Coty Tuber
1—Model 111-C Potdevin F & S cellophane bag machine
1—ATF-Webendorfer Carbon Processor
1—ATF-Webendorfer Interleaver and Zigzag Folder
1—Hudson Sharp facial tissue folder
1—40" Waldron Knife Coater.
1—30" Hudson Sharp Waxing Machine. Type AW2.
1—52" Waxer & Laminator.
1—64" Sheet Paraffining Machine.
1—72" Mayer Equalizer Type Waxing & Laminating Machine.
1—75" Potdevin Type Squeeze Roll Waxing Machine.
1—Langston Tube Winder Equipment.
1—18" & 1—24" Schultz Automatic Roll Machine.
7—Die Presses 1—50" x 22" & 1—44" x 22" Sheridan, 1—38" x 24" Type UA — 2—17" x 42" Seybolds.
1—37" x 24 Kidder.
5—Waldron Embossers, 1—27", 1—32", 1—40", 1—44" heavy duty & 52".
7—Embossers, 1—26", 1—30", 3—60", 1—72" & 1—81"
1—2 oz & 1—½# to 1# Cellophane Bag Machines.
2—Paper Converting Machine Co.'s ¼ Fold Napkin Machines. 1—2 web.
1—Hudson-Sharp 13½" x 13½" ¼-Fold Napkin Machine
2—Model "A" Junior Lawtomatic Toilet Roll Wrapping Machines.
1—48", 55", 67", 76" and 100" Hamblet Single Rotary Sheeters with backstands and layboys.
1—90" Moore & White Single Rotary Sheeter with backstands.
1—4S & 1—#5 Potdevin Sack Machines
1—48" Hudson Sharp Embosser-tinter

PAPER AND PULP MILL MACHINERY

1—60" Holyoke 10 Roll Stack of Super Calenders.
1—54" Holyoke, 7-Roll Stack of Super Calenders.
3—Nash Vacuum Pumps, L-5, L-6 and L-7.
5—3 Pocket Grinders Stones, 26" & 27"x54".
1—Sutherland Right Hand 42" Disc Refiner.

GIBBS-BROWER CO., INC.
10 Depot Plaza, White Plains, New York
Telephone—ROckwell 1-1130 A-30

Situations Wanted

TRAINED EXECUTIVE

Broad experience with kraft pulps; specialty papers and paper board. If you need better quality and increased production call or write Herbert Maus — Phone 204J — Box 149 — Springhill, Louisiana. 32 years experience — results guaranteed.

M-14

SALESMAN

Capable of own planning, looking for challenge where knowledge and hard work count. 7 years sales, 5 years paper production experience. B.S. (Chem. Eng.) Age 35, married, willing to travel extensively. Kindly reply to Box 56-134 care Paper Trade Journal. M-7

Chemical Engineer with 7 years experience in the Paper Industry seeking a position preferably on development work of coated papers.

Previous experience consists of investigational work and quality control supervision in paper mill; also, quality control, supervision, and development work on asphalt and plastic coated papers. Familiar with production, testing and sales.

Box 56-139 Care Paper Trade Journal
A-30

MECHANICAL ENGINEER—Over 30 years experience in Supervisory Engineering and Management capacities. Very successful and proven record in Engineering, Power and Production. Invites correspondence. For permanent or special assignment. Mid west preferred. Address Box 56-136 care Paper Trade Journal. M-28

SALES ENGINEER — Chemical background. Ten years successful experience sales and sales development technical, laminated and functionally coated papers to industry, converters, jobbers. Seeks position with growth opportunity. Strong background all packaging materials. Particularly well versed polyethylene extrusion laminates. Prefer sales development at management level in paper or chemical field. References. Resumé on request. Address Box 56-132 care Paper Trade Journal. A-30

BEATER ENGINEER—Age 47, 24 years paper making experience, 10 years as beater engineer on various stocks and colors. Have had complete charge of stock preparation. Available. Address Box 56-129 care Paper Trade Journal. A-30

SUPERINTENDENT wishes to make change. have had 30 years of practical experience in manufacture of paper such as Bond, Ledger, Bristols, Offset and similar grades, both in Sulphite and rag. Can furnish references. Address Box 56-124 care Paper Trade Journal. M-14

WORKS MANAGER—Production Executive; paper, board and conversion; seeks challenging opportunity in organization needing man exceptionally capable in organization; manufacturing; and labor relations. Employed. Diversified lines. Addr ess Box 56-109 care Paper Trade Journal. A-30

For Sale

PAPER COATING MACHINERY MANUFACTURERS — Waxing, Oiling, Carbon Laboratory Coating and Treating and Flat Ream Measuring and Converting Machines. New Improvement. THE MAYER MACHINE COMPANY, INC., 1313 Buffalo Road, Rochester 11, N. Y. TF

ROSS PAPER MACHINERY COMPANY

CABLE ADDRESS
JACKROSS

265 PASSAIC STREET • NEWARK 4, NEW JERSEY

BUY WITH CONFIDENCE — RPM SINCE 1919 — SELL WITH CONFIDENCE

USED PAPER MAKING & CONVERTING MACHINERY

Humboldt 2-2177

IMMEDIATE DELIVERY FROM AMERICA'S LARGEST INVENTORY OF PAPER MACHINERY

BALERS

1—Buffalo Baling Press—upstroke w/motor.

BEATERS

1—Dilts high speed iron tub. Roll 62" dia. x 54" face with 75 HP motor & controls.
1—E. D. Jones "Bertram" 1500 lbs. Roll 72" x 63". C. I. Tub. Complete with Foxboro Air Cylinder Control and washer. Driven by 3 h.p. gear head motor. Used 2 years.

CYLINDER MOULDS

3—136" face x 54" dia.—stainless steel covering.

CALENDER STACKS

1—Black Clawson 82" 3 roll with doctors.
1—Black Clawson 82" 5 roll with doctors.
1—Black Clawson 90" 7 roll with 3 spare rolls.
1—Black Clawson 104" 7 roll w/doctor and water cooled bearings.
1—Lobdell 124"—9 roll stack—water cooled bearings.
1—Sandy Hill 84" 7 roll, with doctors.

CLASSIFINER

1—Dilts Classifiner w/spare discs.

DRIVES

3—Hamilton Parallel enclosed Drives; 1—60 h.p.; 1—100 h.p. and 1—125 h.p.
9—Reeves Open and Enclosed, Sizes 0-D, 1-D, 1E, 3F, 3G, 5E, 6C.

DRYERS

2—42" face x 36" dia.
3—44" face x 36" dia.
2—46" face x 36" dia.
42—46" face x 24" dia. chrome plated, complete with 2-deck frames, gears, bearings, steam joints & felt equipment.
24—46" face x 48" dia. chrome plated, complete with gears, bearings, steam joints & felt equipment.
3—52" face x 48" dia. with gears & bearings.
1—52" face x 24" dia. with gears & bearings.
18—58" face x 36" dia., complete with 2-deck frames, gears, bearings, steam joints & felt equipment.
2—84" face x 28" dia.
7—84" face x 36" dia. with gears.
1—86" face x 36" dia. with bearings.
2—88" face x 36" dia.
1—90" face x 18" dia. with A-F bearings.
4—90" face x 36" dia. with A-F bearings.
1—104" face x 36" dia.
1—104" face x 48" dia.
1—110" face x 42" dia.
1—116" face x 48" dia.
1—120" face x 23" dia. with rope carrier.
7—120" face x 48" dia. with rope carriers.
1—120" face x 42" dia.
1—124" face x 48" dia.
1—126" face x 48" dia.
13—127" face x 42" dia.
1—130" face x 48" dia.
2—160" face x 28" dia. with rope carriers.
10—160" face x 36" dia.
1—160" face x 42" dia.
43—160" face x 48" dia. complete dryer section including felt dryers, felt rolls, etc.

EXTRACTOR ROLL

1—Downingtown 138" x 24" Extractor Roll with 19" diameter rubber riding roll—all anti friction bearings.

FILTERS

1—Oliver Continuous Filter, Cylinder 8' Diameter x 10' Face, Steel Vat. Complete with repulper and drives with motors. Used 2 Months.

FLAT SCREENS

3—8 plate Sandy Hill roller shoe with scrapers.
2—8 plate Bagley & Sewall with scrapers.
2—12 plate Sandy Hill, anti friction bearings.

JORDANS

1—Appleton #2 anti-friction Bearings with 150 HP Westinghouse, Synchronous Motor and Stainless Steel filling.
1—E. D. Jones pony Jordans 3/16" stainless steel fillings.
1—E. D. Jones Pony Jordan, ball bearing, with stainless steel filling.
1—Smith & Winchester standard with granite filling.
1—Noble & Wood Bull Dog Jordan. Anti friction bearings with coupling and motor base.
1—Appleton #2—anti friction bearings.

KNIFE GRINDERS

1—132" Rogers with motor. Used 5 months.
1—130" Hanchett belt driven complete with coolant pump, and 2 spare wheels.
1—92" Seybold with motor.

LABORATORY EQUIPMENT

1—Biggs 6' diameter Rotary Digester 100# pressure.

MOTORS

12—125 H.P. Westinghouse synchronous enclosed. Brand new, 440 volt, 720 rpm forced air ventilation with starters.
1—Westinghouse 300 h.p., 388 r.p.m., 440 v., 3 phase, 60 cycle.

PASTING MACHINE

1—Hudson Sharp 72"—3 roll Paste Applicator with Link Belt Reducer and 25 h.p. motor. (New 1946).

PULP EQUIPMENT

3—2 ft. x 8 ft. type 300 Tyler Niagara stainless steel Chip Screens.
1—3 ft. x 8 ft. type 300 Tyler Niagara stainless steel Chip Screens.
1—Lannoye Pulper—enclosed drive and 30 h.p. motor.

PULP PRESSES

1—Hydraulic Machine Co. 250 tons 30" x 36" platen, 48" daylight, 30" stroke, 16" ram —upstroke. For baling dry pulp.

PUMPS

44—Centrifugal Pumps open & closed impellers.

REELS

1—Pusey & Jones 162" drum reel.
1—Downingtown 104" 2 bowl reel.
1—138" English Drum Reel.

REFINERS

1—Dilts #1 Hydrafiner w/totally encl. motor.
1—Dilts Hydrafiner.
2—34" Sutherland Disc Refiner, stainless steel discs. 1—left hand and 1—right hand.

ROLL GRINDERS

1—Lobdell Model 3MB for 30" diameter rolls —19 ft. 6" bed. Complete with crowning device and 15 h.p. main motor drive and 2 10 h.p. motor grinder wheel drives.

ROLLS—PRESS, COUCH, CALENDER, etc.

32—Press rolls, brass and rubber covered.
14—Couch rolls, brass and rubber covered.
250—Brass and steel carrying rolls.

ROTARY SCREENS

1—#2 Bird—Copper vat.
4—#2A Bird with copper vats.

SHEETERS

1—Cameron 124" quick change double slitter assembly for board sheeters. Complete with 16 pneumatic slitters.
1—Moore & White simplex 114" sheeter with Maxson Layboy, overlapping delivery, 8 roll backstand motor and starter.
1—Hamblet 100" single knife with 3 slitters.
1—Hamblet 81" duplex with Erie Layboy 12 roll backstand and motor.
1—Hamblet 75" with layboy and backstands.
2—Hamblet 110" single knife sheeters.
1—Beck 45" sheeter.
1—Beck 48" with jogger.
1—Hamblet 55" with 3 roll backstand.
4—Moore & White 80" w/overlapping layboy.

SHREDDERS

2—Mitts & Merrill Air Fluff Paper Shredder. Used 9 months.
1—Mitts & Merrill #17-2A paper shredder.
2—Taylor Stiles Giant Stock Shredders, Style 36.

SLITTERS AND WINDERS

1—Cameron 42" Model 6.
2—Cameron 165" Model 18—Complete with motor drive and roll ejector.
1—Cameron 194" Model 19. Anti-friction bearings, 2800 f.p.m., equipped with air operated quick change, constant tension and roll ejector.
1—Moore & White 66"—two drum.
3—Essex 42" center wind—30" duplex rewind. Anti friction bearing equipped.
1—Cameron 42" Model 9-5.
1—Cameron 62"—Model 6.
1—Schultz 18"—Automatic with motor.

STOCK PUMPS

1—Shartle 10 x 20 single plunger pump.
1—Moore & White 10 x 16 Triplex.
1—Beloit 8 x 10 Triplex.
1—Downingtown 8 x 18 triplex, with enclosed drives and motor.

SUCTION BOXES

5—192" Aluminum Suction Boxes.

SUCTION COUCH ROLLS

2—Beloit 25" diameter x 114" face, anti friction bearings, with stands, Direct drive.
1—Millspaugh 30" dia. x 192" drilled face, Trunnion roller bearings, stands, etc.
1—Sandusky suction couch 25" diameter x 122" drilled face.
1—Sandusky suction couch 18" diameter x 122" drilled face.
1—Sandusky 28" diameter x 162" drilled face complete Trunnion Roller Bearing.
1—Sandusky 22" diameter x 135" drilled face trunnion roller bearings.
1—Sandusky 18" diameter x 116" drilled face.

SUCTION PRESS ROLLS

1—Millspaugh 30" diameter x 194" drilled face with bearings, stands, etc.

SUPERCALENDERS

1—Norwood 30" 5 roll, with motor drive.

TISSUE AND TOWELING MACHINE

1—B & S 90" single cylinder machine. Complete including pumps, piping, valves, enclosed drive and VS motor drive. Full details on request.

TRIMMERS POWER BACK GAUGES

1—Oswego 50".
1—Seybold 94" Model 15 ZJ.
1—Seybold 64" Model 12-Z.
1—Seybold 84" Dayton with motor and spare knives.
1—Seybold 72" Dayton.

VACUUM PUMPS

1—Nash H-3 with 5 h.p. motor.
2—Nash H-4.
1—Nash L-3 totally encl. 5 h.p. motor.

VOITH INLETS

1—New Valley Iron Works 156" x 36" monel lined inlet and head box.
2—Valley Iron Voith Inlets, adjustable 83" to 86"—Brass lip, stainless steel apron.
1—Valley Iron Works—106".
1—Valley Iron Works 151" stainless steel inlet and head box.
1—Bagley & Sewall 144" stainless steel clad high speed inlet and headbox.

VORTRAPS

7—Nichols 4" stainless steel Vortraps—rubber lined heads.

WET MACHINES

1—Rogers 72" x 48" Wet Machine. Double press sections.

YANKEE DRYERS

1—10 ft. diameter x 132" face with bearings
1—Beloit 12 ft. diameter x 140" face—75 lb. steam pressure.

For Sale

FOR SALE

50" Hamblet Sheeter with Maxson Layboy and Counter
72" Hamblet Sheeter with Layboy and Backstand
96" Moore & White Sheeter with Layboy and 8-roll Backstand
36" Waldron 2-drum rewinder
50" Cameron Type 42 Slitter
48" Kidder Slitter, two rewind shafts
30" Hobbs Slitter
60" Moore & White Layboy
44" Chandler & Price Automatic Clamp Power Cutter
20 New Fast Flexible Couplings for 2, 2½ & 3½" shafts.

Thomas W. Hall Company
Stamford, Conn. TF

For Sale

FOR SALE OR TRADE

1—Noble & Wood Breaker Beater, 1500 lb. cap., New 1948.

2—Valley Iron Works Beaters with De-inking equipment, 1000 lb. cap.

2—Dayton High Speed Beaters, 1000 lb. cap., New 1948 & 1930.

ROCKY RIVER PAPER MILL, INC.
Three Rivers, Michigan
M-14

FOR SALE — PHOENIX, N. Y.

TISSUE AND TOWELING PAPER MILL

Production 15,000 lbs. Tissue or 20,000 lbs. Toweling. Brick and concrete sprinklered buildings — 25,000 square feet on river with two water wheels, 250 h.p. each with generators.

Excellent skilled labor available.

90" Bagley & Sewall single cylinder machine complete including enclosed drives and main motor drive.

Machine including stock preparation equipment erected and ready to run.

READY FOR IMMEDIATE START UP.

ROSS PAPER MACHINERY COMPANY
265 Passaic St. Newark, N. J.
Tel. HUmboldt 2-2177
TF

YOUR GUARANTEED CASH MARKET FOR SURPLUS MACHINERY
WITH IMMEDIATE REMOVAL FROM YOUR MILL

ROSS PAPER MACHINERY COMPANY
265 Passaic Street, Newark 4, New Jersey
TF

FOR SALE

Hudson Sharp toilet tissue converter 850 81"
Dietz toilet tissue converter 81"
Lautomatic Jr. toilet roll wrapper
Babcock Optimus 26 x 38 cutting and creasing cylinder press
Seybold 48" automatic clamp cutter.
Address Box 56-140 care Paper Trade Journal.
A-30

FOR SALE

Small Paper Mill. Ready to run. Versatile production includes tissue, toweling, twisting or manifold, light weight papers. In Stillwater, New York, on the Hudson River. Includes water rights, brick buildings, room for expansion. Very reasonable. Terms. Write Box 56 care Paper Trade Journal. TF

Save on Your
INDUSTRIAL
TRACK
FOSTER
QUALITY
FULLY
GUARANTEED
RELAYING RAILS
Handle more cars better—cost less to install and maintain. Foster stocks all Rail Sections 12# thru 175#, Switch Material and Track Accessories.
SEND FOR CATALOGS
RAILS · TRACK EQUIPMENT · PIPE · PILING
L.B. FOSTER CO.
PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4
ATLANTA 8 • HOUSTON 2 • LOS ANGELES 5

FOR SALE

Heavy duty Hudson Sharp embosser, almost new. Maximum embossing face 50". This machine is equipped with a 44" printing letterpress unit for tinting-embossing. Unwind provides for rolls up to 40" in diameter, center shaft rewind, equipped with 10 horse power slip ring, 220 volt, 3 phase motor. One set embossing rolls Alligator design with machine. This embosser is a beautiful piece of equipment in practically new condition. Address Box 56-131 care Paper Trade Journal.
A-30

Wanted

WANTED

Laboratory Fourdrinier Paper Machine.

Trim Width under 36 inches.

Address Box 56-110 care Paper Trade Journal.
A-30

WANTED

Job Lots of Paper & Paperboard

We need a substantial supply of odd lots, side rolls, obsolete, surplus, or damaged lots of paper. Will buy all grades, any quantity. MELROSE PAPER CO., INC., 208 Walnut St., Philadelphia 6, Pa. Market 7-0800. TF

WANTED FOR EXPORT

Board Machine Minimum Four Cylinders, Good Condition, Stock Preparation Optional, State Trim, Production 40/80 Tons.

Commercial Cork Corp.
40 East 49th St., New York 17, N. Y.
M-14

FOR SALE—1000 Tons M/F Newsprint on rolls, substance 52 grs./sqm., excellent French quality, delivery second half 1956. Address Box 56-123 care Paper Trade Journal. M-7

FOR SALE—50" and 60" Shear-cut Slitters & Rewinders; SET-UP AND FOLDING BOX MACHINES. Address Box 9-B, 3180 Lake Shore Dr., Chicago, 14, Ill. TF

COATING RODS FOR SALE
EQUALIZER RODS, DOCTOR RODS
METERING RODS

Various rod diameters wound. All sizes of Music wire and stainless wire stocked. Wire is spring tempered for longer life and to control weight of finished product.
DeNeve & Consler Co. 2 Boston St. Rochester 21, N.Y.
A-30

WANTED

Bausch & Lomb Glossmeter in working condition.

Springdale Laboratories
835 Hope Street
Springdale, Connecticut M-7

SURPLUS PAPER MILL EQUIPMENT FOR SALE

Equipment includes pumps, reducers, motors, rolls, etc. For further information contact Purchasing Department, Union Bag & Paper Corp., PO Box 570, Savannah, Ga.
A-30

350 H.P. MOTOR FOR SALE

New Elliott (Crocker-Wheeler Motor) 440 volts, 60 cycle, 3 phase, 1750 R.P.M. Slip Ring. On original skid. Never used. Larger motor substituted.

Thomas W. Hall Co., Stamford, Conn.
TF

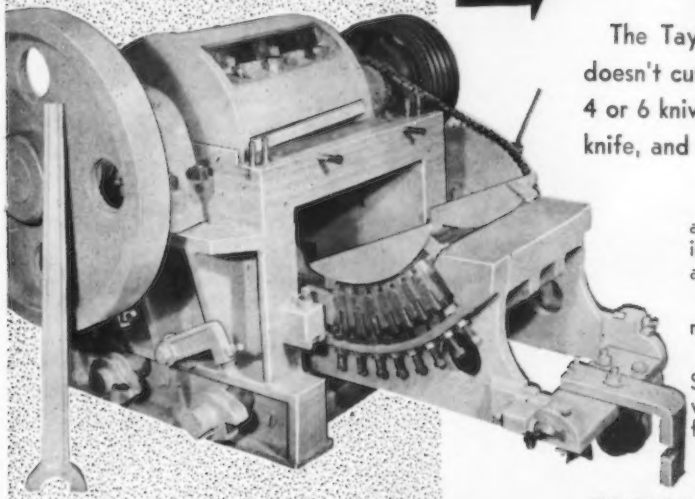
WANTED—Pope Type constant speed reel 94" wide. THE JELKS COMPANY, 3000 Princeton Ave., Middletown, Ohio. M-14

WANTED — One #4 Shartle Refiner. One Shartle Disintegrator (Motor and starting equipment not required). Address Box 56-141 care Paper Trade Journal. A-30

Buy U.S. Savings Bonds

TAYLOR STILES *Multiplex* RAG CUTTER

GIVES 32,400 Cuts A Minute



The Taylor Stiles No. 520 Multiplex Cutter doesn't cut rags — it PULVERIZES them. It has 4 or 6 knives in the revolving element, one bed knife, and 8 cradle knives.

With the head revolving at 600 RPM, rags are given 32,400 cuts a minute! This pulverizing action reduces beater time and makes for a finer product.

This machine is highly popular not only for roofing paper, but also for fine writing paper.

For full description of this and other Taylor Stiles Cutters for fine writing, roofing and vulcanized papers, write for 4 page illustrated folder "Taylor Stiles Cutters for Paper Mills."

No obligation.

TAYLOR, STILES & COMPANY

10 Bridge Street **Riegelsville, New Jersey**

University of Maine Lectures

on

Pulp and Paper Manufacture

SERIES NO. 2

A Valuable Textbook for the Paper Industry

Embracing the Complete Lectures as given at the University of Maine.

Three hundred and seventy-three pages and an additional 4-page colored insert of up-to-date material covering a broad field in both pulp and paper making and including many fine illustrations and diagrams.

For students expecting to enter the industry who wish to increase their knowledge and improve their positions, this textbook offers a complete education in pulp and paper manufacture.

For executives, superintendents, chemists, engineers and others whose knowledge of the industry is more comprehensive, this textbook will be invaluable as a reference for providing figures, process details, etc.

Bound in Cloth—Gold Lettering $7.50 Per Copy $7.00 in lots of 5 or more Postage Prepaid

Published by

LOCKWOOD TRADE JOURNAL CO., Inc.

15 WEST 47th STREET • **NEW YORK 36, N. Y.**

INDEX TO ADVERTISERS

PAPER TRADE JOURNAL

A

Abbey Paper Stock Co. —
Acme Steel Co. —
Albany Felt Co. 41
Allegheny Ludlum Steel Corp. —
Allis-Chalmers —
American Bitumuls & Asphalt Co. —
American Cyanamid Co., Paper Chemicals Dept. —
American Defibrator Co. —
American Steel & Wire Co. —
Antara Chemicals, Sales Div. Gen. Aniline & Film Corp. —
Apmew, Inc. —
Appleton Machine Co., The —
Appleton Wire Works —
Appleton Wood Products Co. —
Armco Drainage & Metal Products —
Armco Steel Corp. —
Armstrong Machine Works —
Asten-Hill Mfg. Co. —
Automatic Transportation Co. —

B

Babcock & Wilcox Co. 10
Bahnson Co. —
Bahr Bros. Mfg. Co. —
Bailey Meter Co. —
Barrel, Wm., Co. —
Bart Manufacturing Co. —
Bauer Bros. Co. —
Beckman Instruments —
Beloit Iron Works Co. —
Bird Machine Co. 15
Bixby, R. W., Inc. —
Black-Clawson Co. 7
Boler Petroleum Co. —
Bone Brothers, Ltd. —
Borden Co. —
Bowsher Co., N. P. —
Brandon Sales, Inc. —
Bristol Company —
Brown Co. —
Becco Chemical Div. Food Machy. & Chem. Corp. —
Buffalo Forge Co. —
Buffalo Pumps, Inc. 37
Burgess Pigment Co. —

C

Cady, E. J., & Co. —
Calgon, Inc. —
Cambridge Instrument Co. —
Cameron Machine Co. —
Carthage Machine Co. —
Central National Corp. —
Chemipulp Process, Inc. —
Chicago Bridge & Iron Co. —
Cities Service Oil Co. —
Clark-Aiken Company —
Classified Advertising 61
Clearing House 61
Cleveland Worm & Gear Co. —
Columbus-Geneva Steel Div. —
Columbia-Southern Chem. Corp. Sub. of Pittsburgh Plate Glass Co. —
Combustion Engrg. Co. —
Corn Products Sales Co. —
Crane Co. —
Crosby Chemicals, Inc. —
Crucible Steel Corp. of America —
Curtiss-Wright Corp. —

D

Davis, Frank H., Co. —
Day, J. H., Company —
DeLaval Separator Co. —
De-Zurik Shower Co. —
Diamond Alkali Co. —
Dicalite Div., Great Lakes Carbon Corp. —
Dietz Machine Works —
Dilts Machine Works 7
Dodge Mfg. Co. —
Dow Chemical Co. —
Dowell, Inc. 2
Draper Bros. Co. —
du Pont, E. I., de Nemours & Co., Dyestuffs Dept. —
du Pont, E. I., de Nemours & Co., Electrochemical Dept. —
du Pont, E. I., de Nemours & Co., Organic Dept. —

E

Eastman Chemical Products, Inc. —
Eaton Manufacturing Co. —
Ebasco Services, Inc. —
Egan, Frank W., & Co. —
Elixman Paper Core Co. —
English China Clays Sales Corp. 56

F

Falk Corporation —
Farrel-Birmingham Co., Inc. —
Farval Corp. —
Fibre Making Process —
Fiske Bros. Refining Co. —
Fitchburg Screen Plate Co. —
Foxboro Co. —

G

Garlock Packing Co. —
Geigy Dyestuffs Div., Geigy Chemicals Corp. —
General Dyestuffs Co. —
General Electric Co. —
Gibbs Brower Co. 62
Gilbert & Nash Co. —
Glidden Company —
Goodrich Chemical Co. 3
Goodyear Tire & Rubber Co. —
Gottesman & Co. —
Graver Tank & Mfg. Co. —
Grinnell Co., Inc. —
Gulf Oil Corporation 43
Gurley, W. & L. E. —

H

Hagan Corp. —
Hall, Thomas W., Inc. —
Hamblet Machine Co. —
Hayden, Stone & Co. —
Hendrick Mfg. Co. —
Hercules Powder Co. Back Cover
Heyden Chemical Co. —
Holyoke Machine Co. —
Hooker Electrochemical Co. 6
Huber, J. M. Corp. —
Hubinger Company —
Hungerford & Terry, Inc. —
Huyck, F. C. & Sons 8 & 9

I

Improved Machinery, Inc. —
Inta-Roto Machine Co. —
International Wire Works —

J

Jefferson Chem. Co. —
Jeffrey Mfg. Co. —
Jenkins Brothers —
Jenkins, M. W., Sons, Inc. —
Johns-Manville Corp. 35
Johnson Corp., The —
Johnson Alvin H., & Co. 58
Jones, E. D., & Sons Co. —

K

Kalamazoo Tank & Silo Co. —
Kidder Press Co. 53
Knox Woolen Co. —

L

Langston, Samuel M., Co. 39
Laucks Laboratories —
Lindsay Wire Weaving Co. —
Link-Belt Co. —
Lubdell United Co. 45
Lockport Felt Co. —
Lodding Engineering Co. —
Lukens Steel Co. 33
Lunkenheimer Co. —
Lyddon & Co. —

M

Magnus Metal Co. —
Magnuson Products Corp. —
Main, Charles T., Inc. 56
Manchester Machine Co. 49
Manheim Mfg. & Belting Co. —
Mead Board Sales, Inc. —
Mead Pulp Sales, Inc. —
Meincke, A. M., & Son —
Merrick Scale Co. —
Metallizing Engrg. Co. —
Minerals & Chem. Corp. —
Monsanto Chemical Co., Paper Chem. Div. 25 to 28
Monsanto Chemical Co., Plastics Div. 19
Moore & White Co. —
Morden Machines Co. —
Morey Paper Mill Supply Co. —
Mount Hope Machinery Co. —
Multi Metal Wire Cloth Co. —
Murray, D. J., Mfg. Co. —

N

Nash Engineering Co. —
National Aluminate Co. —
National Starch Products, Inc. —
National Tube Co. —
Naylor Pipe Co. —
Nichols Engrg. & Research Corp. —
Nopco Chemical Co. —
Nordstrom Valve Div. of Rockwell Mfg. Co. —
Northwest Paper Co. —
Norton Co. —

O

Oakite Products, Inc. 60
Ohio Injector Co. —
Olin Mathieson Chem. Corp. —
Orr Felt & Blanket Co. —
Osborne Paper Mill Equipt. Corp. —

P

Paper Converting Machine Co. —
Paper Corp. of U.S. 60
Parsons & Whittemore —
Penick & Ford, Ltd. —
Pennsylvania Salt Mfg. Co. —
Perkins, B. F. & Sons, Inc. —
Perkins Goodwin Co. —
Personnel Service Associates —
Pioneer Paper Stock Co. —
Pittsburgh Piping & Equip. —
Pittsburgh Plate Glass Co. 51
Poirier Control Co. —
Potdevin Machine Co. —
Powell Valves —
Price & Pierce, Ltd. —
Pusey & Jones Corp. —

R

Railway Supply & Mfg. Co. —
Raymond, Chas. P., Service, Inc. 61
Read Standard Corp., Bakery Chem. Div. —
Read Standard Corp., Blower Stoker Div. —
Ready-Power Co. —
Record Fdy. & Machine Co. —
Red Ray Mfg. Co. —
Reliance Elec. & Engrg. Co. —
Rem-Cru Titanium Inc. —
Restigouche Corp. —
Rice Barton Corp. 12
Ridge Tool Company —
Riedel, Gus, & Son —
Riegel Paper Corp. —
Rockwell Co., W. S. —
Rogers Sam'l C., & Co. —
Rohm & Haas Co. —
Ronningen-Petter Co. —
Roosevelt Paper Co. —
Ross, J. J., Co. —
Ross, J. O., Engineering Co. —
Ross-Midwest Fulton Co. 47
Ross Paper Machinery Co. 63
Rust Engineering Co. 56

S

Sandusky Fdy. & Mch. Co. —
Seaboard Air Line R. R. Co. —
Shartle Bros. Machine Co. 7
Shuler & Benninghofen —
Sigmamotor Inc. —
Sirrine, J. E., Co. Front Cover
SKF Industries, Inc. —
Smidth, F. L., & Co. —
Smith & Winchester Mfg. Co. —
Socony Mobiloil Co., Inc. —
Sonoco Products Co. —
Spellacy, John R. —
Stebbins Engrg. Co. 57
Steelcote Mfg. Co. —
Stein, Hall & Co. —
Stevens, Charles R., Inc. 58
Stone & Webster Engrg. Corp. —
Stowe-Woodward —
Sutherland Refiner Co. —
Swenson Evaporator Co. —

T

Taylor Instrument Co.'s —
Taylor Stiles & Co. 65
Taylor-Wharton Company —
Tennessee Coal & Iron Co. —
Texas Co. —
Texas Gulf Sulphur Co. —
Thiele Kaolin Co. —
Thomas Paper Stock Co. 59
Timken Roller Bearing Co. —
Titanium Pigment Corp. 55
Torrington Co. —
Towmotor Corp. —
Tracerlab, Inc. —
Trent Tube Co. —
Trimbey Machines, Inc. —
Tube Turns Plastics —

U

United Carbon Co., Inc. —
United Clay Mines —
United Paper Machinery Corp. —
U. S. Rubber Co. —
United States Steel Export Co. —
United States Steel Supply Co. —
U. S. Steel Corp. —

V

Valley Iron Works Co. —
Vanderbilt R. T., Co. —

W

Waldron, John, Corp. —
Walworth Co. —
Waterbury Felt Co. —
Weber, H. G., & Co. —
Webster Mfg. Co. 52
West End Chemical Co. —
Westinghouse Electric Corp., Sturtevant Div. —
West Virginia Pulp & Paper Co. 60
Weyerhaeuser Timber Co. 60
Wheeler Roll Co. —
Whiting Corp. —
Wiegand, Edwin L., Co. —
Williams Apparatus Co., Inc. —
Williams-Gray Co. —
Wisconsin Wire Works —
Wolverine Equipt. Co. —
Wyandotte Chemicals Corp. —
Wyatt Metal & Boiler Works —

Y

Yale & Towne Mfg. Co. —

BUSINESS STAFF

Arthur E. Gordon, Business Mgr.

Francis J. Gordon
15 West 47th Street, New York 36, N. Y. Plaza 7-2370

Frederick B. Grosse, Production Mgr.

George Heitzeberg
15 West 47th Street, New York 36, N. Y. Plaza 7-2370

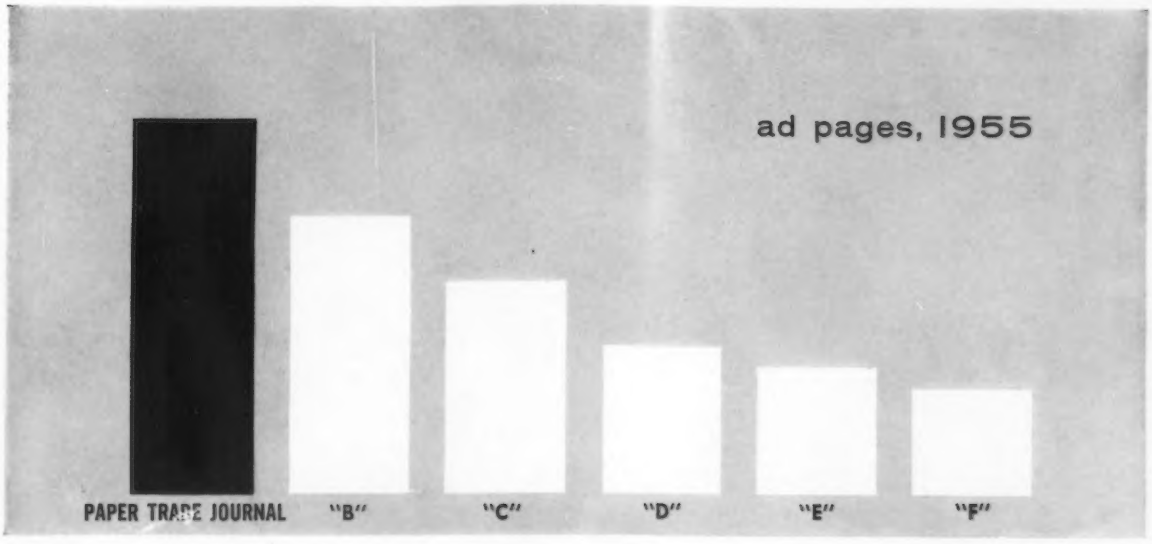
H. K. Vinton
CHICAGO 3, ILL.: Room 1020, 79 West Monroe St. CEntral 6-2784

H. L. Poulton
PITTSBURGH, 11, PA.: 610 Pennridge Road. Hemlock 1-1571

McDonald-Thompson Company
SAN FRANCISCO, CAL.: 625 Market St. YUkon 6-0647
LOS ANGELES, 5, CAL.: 3727 West Sixth Street. DUnkirk 7-5391 DENVER, 2, COLO.: 222 Colorado Nat'l. Bank Bldg. KEystone 4-4669
SEATTLE 4, WASH.: National Bldg.—ELliott 3767 HOUSTON 6, TEXAS: Room 214, 3217 Montrose Blvd. JAckson 9-6711
Dallas, 6, Texas: 5526 Dyer Street
Miami, Florida:— Hal Moore, 279 N.E. 79th St.
Georg J. Linder, Frankfurt a Main, Wittlesbacher Alle 60, Germany — Telefon 46372

While we strive for accuracy in preparing the above index which is purely a service to our readers, we cannot be responsible for errors.

HUGHES PRINTING CO.
EAST STROUDSBURG, PA.



why advertisers consistently invest more in

PAPER TRADE JOURNAL

than any other publication in the pulp and paper field

As would be expected, there is no single answer to PAPER TRADE JOURNAL's leadership in number of ad pages, as shown in the chart above. PAPER TRADE JOURNAL has earned the confidence of advertisers because it—

- enjoys a renewal rate that is the highest in its field—over 80% for the past 20 years—in spite of having the highest subscription price
- covers all sections of the country, in fair proportion to the location of paper mills
- carries the most "want ads" run by paper mill men. (These ads, often paid for by individuals, reflect their first-hand appraisal of the best-read publication in their own plants.)
- leads in mill readership, particularly among production executives
- presents over 2,000 editorial pages per year, much of this original articles by outstanding authorities in the field
- ranks highest with mill readers, according to reader surveys
- provides ABC circulation statements
- offers advertisers basic market data on the pulp and paper field, and in specific groups of products used extensively in the field

So, naturally, advertisers invest more in PAPER TRADE JOURNAL than in any other publication in the pulp and paper field.

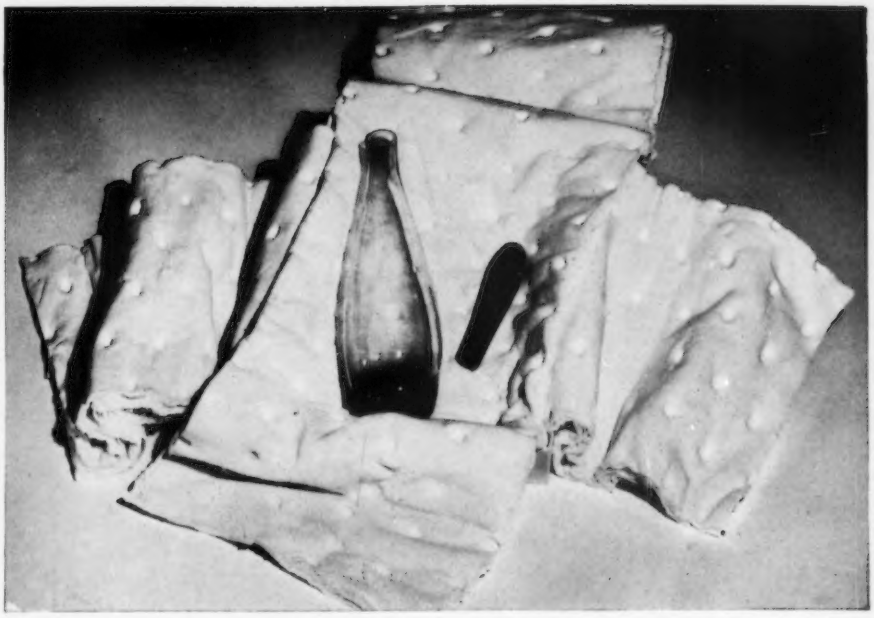
PAPER TRADE JOURNAL

"the most useful paper"

15 West 47th Street, New York 36, N. Y.

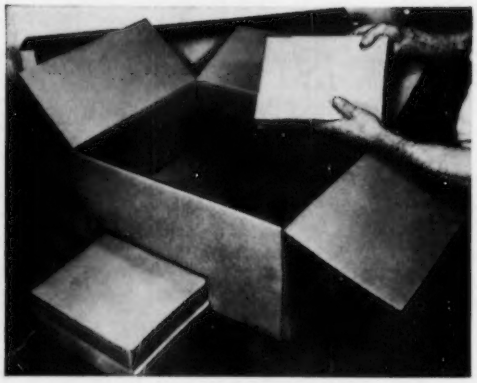
PITTSBURGH • CHICAGO • DENVER • HOUSTON • SEATTLE • SAN FRANCISCO • LOS ANGELES

This Advertisement appeared in Industrial Marketing



REPELLENT WADDING—The unique characteristics of Aquapel make it ideal for sizing grades like cellulosic cushioning materials, which have formerly presented difficult problems. A new concept in sizing, Aquapel reacts chemically with cellulose fibers to form a surface that is resistant to the penetration of water, acid, and alkali.

AQUAPEL® SOLVES THE TOUGHEST SIZING PROBLEMS



JUTE LINERS—Efficient sizing of alkaline jute liners for corrugated boxes has always been difficult to obtain. Now Aquapel makes it easy without sacrificing strength. A small amount of Aquapel provides a degree of resistance to moisture that keeps boxes looking better longer.

Impossible to size? If you haven't tried Aquapel, you haven't tried the new concept in sizing that makes the difficult look easy.

There are many good reasons for the Aquapel difference. To begin with, Aquapel is not just "another sizing agent." Neither resin nor wax, Aquapel is a chemical compound that becomes an integral part of the fiber. It is never just "stuck on."

Applied on the surface, Aquapel is also a lot more than a surface size in the usual sense. Any equipment commonly used for the surface treatment of paper can be used to apply Aquapel. And it takes only a little Aquapel to make a big difference.

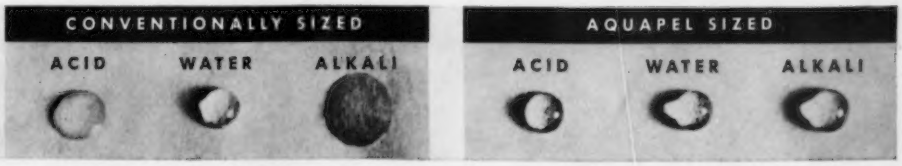
If you haven't tried Aquapel, write Hercules for a sample and descriptive literature.

Paper Makers Chemical Department

HERCULES POWDER COMPANY

INCORPORATED

962 King Street, Wilmington 99, Del.

PP56-2

AQUAPEL®
makes the difference